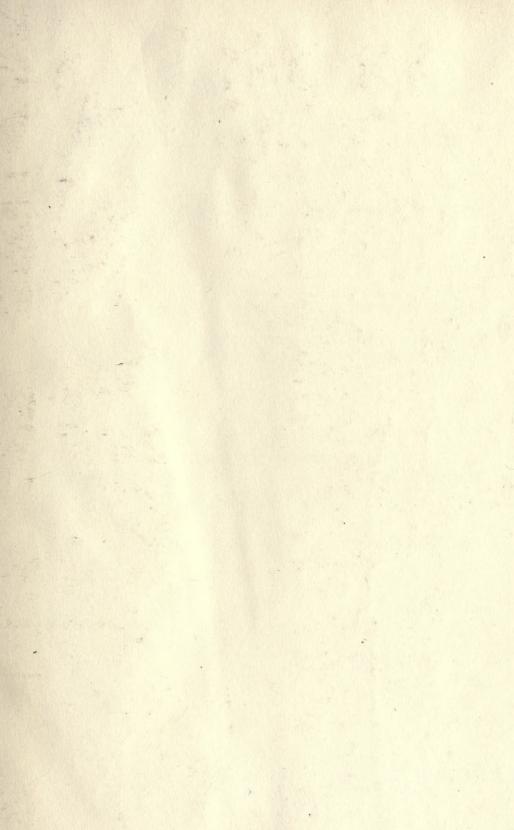
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## INTERNATIONAL ABSTRACT OF SURGERY

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### COLLECTIVE REVIEWS

#### RECENT ADVANCES IN ORTHOPEDIC SURGERY

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ITHIN the last five years literature on orthopedic work has been very conspicuous. One seldom sees a medical journal that does not contain an article pertaining to orthopedic surgery, which in itself is proof that the medical profession as a whole is taking a keen interest in this work.

While other specialties have had their day, only to be relegated to the field of the general surgeon, orthopedic surgery has maintained its place and, particularly in America, is more strongly than ever intrenched as a specialty to which an increasing number of men are devoting their entire time. The chief reason for this perhaps is the fact that orthopedic cases entail prolonged and careful post-operative treatment, and the general surgeon with a large clinic to maintain and whose energy is taken up with cases of a more acute type finds he has not the necessary time to devote to this task. Two years ago a section devoted to orthopedic surgery was created by the American Medical Association.

An exhaustive review of the literature on the subject of orthopedic surgery would involve too much detail for a paper of this character. The writer, therefore, will confine himself to those subjects that have been prominently under discussion.

#### TRANSPLANTATION OF BONE

As a branch of orthopedic surgery the successful transplantation of bone has probably been the most important. While many good results have been reported in the transplantation of bone from one individual or even one animal to another, the best results have been attained in the trans-

plantation from one area to another in the same individual. That foreign bodies may heal permanently in the living tissues is an established fact. Gluck (1), Bircher (2), and König (3) have recorded the successful replacement of bone by ivory. C. H. Mayo (4) has used ivory successfully as an intramedullary plug to induce repair in fractures of various kinds. Heteroplastic transplantation of bone from animals was an early practice, as evidenced by the fact that, in 1682, Jobi Meekren used a piece of the skull of a dog to fill a defect in the cranium of a soldier. The operation was successful, but the Church, considering it improper that a man should retain dog's bone in his skull, forced the surgeon to remove it. From 1810 to the present time Merrem (5), Flourens (6), Wolf (7), Ollier (8), and others have reported heteroplastic transplants. Many have cited instances of the death of the transplanted bone, but these were heteroplastic and not autogenous transplants. All emphasized the importance of the periosteum and the marrow substance, claiming the formation of new haversian canals and the deposition of new bone about these canals by the osteoblasts. The exact value and the function of the periosteum has been a question of no inconsiderable interest. The work of Ollier (8), published in 1876, showing that periosteum was the chief factor in the regeneration of bone, was accepted for years. Macewen (9) has probably done more than any other man to disprove this broad statement. A review of a large number of reported experiments shows a lack of constancy in the results obtained. One observer was able to grow bone from periosteum in a majority of his experiments, another in a

minority. McWilliams (10) concluded that a bone-graft was more apt to live in its new habitat if the periosteum was retained, which, after all, is the clinically important question, and not whether the periosteum is capable of regenerating bone. Practically no one depends upon the periosteum to fill in bony defects or to repair fractures.

The transplantation of bone has been tried and advocated for many and varied conditions. Its great field of usefulness is to repair fractures and to replace defects in bone. Albee (11) and Murphy (12) have both been prominent in bringing forward this work and have greatly aided in its technique. In the treatment of fractures, the transplantation of bone may be said to be confined to the cases of delayed union. The metal plates so strongly advocated by Lane (13) should be used chiefly in recent fractures. Before the transplantation of bone was introduced, the metal plates were used in cases of delayed union and in many instances were not successful, but in the transplantation of bone we have a procedure which will bring about union in practically all cases. There are two ways of using bone-grafts — the intramedullary and the inlay method. In the former the medullary cavity is reamed out and the graft inserted according to the method described by Murphy (12). In the latter a trough is made for the piece to be transplanted and the graft is laid in the trough, thus securing an anatomical approximation of periosteum to periosteum, cortex to cortex, and intramedullary lining to intramedullary lining. This method, which has been described by Buchanan (14). Albee (15), and the writer (16), brings under the control of the surgeon a heretofore most discouraging group of cases. The bone-graft may further be employed for tuberculosis of the spine, as a wedge in the scaphoid in club-foot (17), and as a means of stiffening tuberculous knees (18). Its use, as advocated by Albee (11), to bring about fixation of the spine in tuberculosis has been tried quite extensively and has been enthusiastically championed. Albee and others have shown by post-mortem specimens that the bone-graft becomes attached firmly to the spinous processes, which would seem just grounds for expecting much good from this spinal operation.

Extensive resection of bone may be made for malignancy and the gap filled in with a bone-transplant. The tibia can furnish large pieces of bone and, if necessary, practically the entire fibula may be used.

Some surgeons advise the use of bone-transplant in the spine, as recommended in tuberculosis, for the treatment of scoliosis, particularly in cases following infantile paralysis. The spine should be straightened by plaster of Paris jackets, etc., as much as possible, the graft placed, and the patient maintained in the corrected position until the graft firmly unites. Thus far this method has been only recommended. No series of cases has been reported.

#### SCOLIOSIS

Largely through the work of Abbott (19) the treatment of scoliosis has received great impetus. Abbott's results were so much better than those obtained by older methods of treating cases in the erect or extended position that men immediately began to visit his clinic. He has experimentally produced and corrected scoliosis in a normal individual. He believes it to be a flexion deformity often induced by the faulty position of the child at the desk. By twisting and by flexion back through the same path he claims to accompl sh more than in any other way and reports cures. The whole question of scoliosis has thus been reopened and widely discussed.

Schanz (20) pointed out that the majority of the scolioses seen in the process of development were not of the severe or malignant type and many improve or remain stationary. He emphasized the seriousness of the malignant type from an economical standpoint and doubted that the school desk was a very prominent etiological factor in the production of lateral curvature. He stated that all real scolioses came from a disturbance of the static load on the spinal column. Lovett (21) emphasized the divergence of opinion concerning scoliosis and its treatment, stating that the term was too loosely applied and that the functional and organic types, should be sharply differentiated. spoke favorably of the Abbott method and believed that it had, on the whole, distinct anatomical advantages and offered the greatest ease of correction.

Forbes (22) has called attention to the so-called rotation treatment. He flexes the spine and rotates the patient by means of the arms. In basic principles the method seems to be very similar to Abbott's.

#### TRANSPLANTATION OF JOINTS

The transplantation of entire joints has been successfully performed in a few instances. The difficulty of obtaining suitable material for transplantation and the uncertainty of the result have deterred many surgeons from attempting it. Tuffier has twice transplanted the elbow-joint. In one instance the joint was obtained from a fresh cadaver and held in cold storage for five

days. Eighteen months after the transplantation there was good functional result. His second case was successful but was too recent at the time of his report. Lexer (23) wrote of the present progress in transplantation of the knee-joint. He cited a case examined six years after transplantation, in which the X-ray showed partial absorption and conditions similar to those found in arthritis deformans, but in which motion and function were satisfactory. The flexion of this joint was not normal; there occurred a pseudo-arthrosis. He stated that all ankylosed joints are not equally suitable for grafting of joints, particularly tuberculous arthritis, which is apt to cause suppuration.

#### TUBERCULOSIS

In the treatment of tuberculosis of the bones and joints some advance has been made. Radicalism in tuberculous joints is practically confined to adults. Stiles (24) has reported the results of excisions in children. His operations were performed on advanced cases and many showed considerable resultant shortening, though less than would be expected. Probably in this type of case the operative results were as good if not better than if conservative measures had been used. Brandes (25) reported 27 resections in children operated on for tuberculosis of the knee. of which 14 cases resulted in firm bony ankylosis, enabling them to become wage earners. Osgood (26) reported 28 cases of excision of the knee in adults; in 14, nothing was used to hold the bones together and in 12, metal plates or wire were used. Convalescence in the latter group was so much easier and union took place so quickly that he advised the use of some material to provide fixation and thus hasten ankylosis.

The question of whether the primary focus in a tuberculous joint is in the bone itself or in the synovial membrane is still under dispute. would seem that either may be the site. Ely (27) stated that the synovia was often the site of the primary lesion. Stiles (24) stated that in the majority of cases of tuberculosis of the knee in children the primary site was in the synovia. Fraser (28), from Stiles' Clinic, recently presented evidence that the primary lesion is frequently in the bone in the metaphyseal area.

Injecting tuberculous joints is a treatment not freely used. Murphy (12) advocates it in septic conditions. Brackett (29) advises the injection of joints through an incision which permits exploration and removal of tissue for diagnosis with 5 per cent iodoform in olive oil. He maintains that the solution must be injected under tension so as to distend the joint and allow the emulsion to get into all its folds. Fenwick (30) and Cashman (31) advocate the use of tuberculin. It is, however, comparatively little used.

The röntgen ray for treating tuberculosis of the bones and joints still has its advocates. Iselin (32) and Schede (33) believe that under proper dosage it gives beneficial results. Schede (33) states that roughened skin and cold abscesses are contra-indications to the use of the X-ray. There is always danger of irritating the skin and the occurrence of late ulcers. This is emphasized

by Iselin (32).

Heliotherapy is a treatment which seems to be gaining rapidly in favor. Rollier (34), of Leysin, has for some time been treating cases of tuberculosis of the joints and bones chiefly by direct sunlight at an altitude of 4,000 feet. The use of plaster of Paris and apparatus are dispensed with and the patients are kept recumbent with traction to prevent deformities. Beginning with a short exposure of about 5 minutes, the time is gradually increased to 2 or 3 hours, every part of the body with the exception of the head being exposed. Austin (35) claims that the efficiency of the sun's rays is much greater at high altitudes. Vulpius (36) thinks the altitude not so important as Rollier would have it. The consensus of opinion, however, is that these cases are greatly benefited by this method of treatment and no doubt it will be more freely used in the future in orthopedic hospitals.

A method of treating tuberculosis of the spine has been advanced by Hibbs (37). It does not involve any transplantation of bone, but is rather an osteoplastic operation and consists of forming an ankylosis between the spinous processes and the diseased area. Also, the laminæ are ankylosed, thus forming a strong posterior splint of bone. By specimens obtained at post-mortem, Hibbs has shown that ankylosis is obtained. This gives another method by which the ankylosis, so essential in the treatment of tuberculosis of the spine, may be secured. It has the advantage over the transplantation of bone in the same condition, since only one incision is necessary, and it is consequently preferred by some, although technical-

ly it is a little more difficult.

Beck's (38) bismuth paste is still being used for the treatment of tuberculous sinuses, and in a certain percentage of cases is of distinct benefit in closing many sinuses. The best results seem to be obtained by Beck.

#### SYPHILIS

Syphilis of the joints, as recently pointed out by O'Reilly (39), is more common than has been

thought. The Wassermann test should be freely used and the parents should be examined also when the test is negative in the patient. No definite connection between rachitis and syphilis has been demonstrated, although many observers incline to this view.

#### CHRONIC INFECTIOUS ARTHRITIS

The group of stubborn arthritides, called variously rheumatoid arthritis, osteo-arthritis, chronic infectious arthritis, etc., are under better control than heretofore. Rosenow's work in bacteriology has aided us considerably in their treatment. A connection between tonsillitis and rheumatism has long been recognized clinically. Rosenow (40) has shown that the streptococcus viridans and hæmolyticus may be isolated in some of these cases in the tonsil, in the joints themselves, or in the glands draining the joint. By removal of the tonsils a considerable number of cases of this group clear up. A vaccine made from the tonsillar crypt secretions, or the joint fluid, or the glands about the joint, has given good results. A certain number of cases in this group may be cured by these measures. Lane (41) claims that intestinal stasis is responsible for many arthritic conditions and reports favorable results following removal of the colon or shortcircuiting the cæcum to the sigmoid. This radical procedure has not been generally adopted, but the observation of Lane's patients under treatment must impress one with the fact that they are greatly improved, radical though the treatment may seem.

Treating these arthritic cases with the glands of internal secretion has accomplished very little. A primary focus in the genito-urinary tract may be the site of the chronic infection, and local treatment often helps the joint condition.

#### ARTHROPLASTY

For many years an ankylosed joint, usually the result of acute infection and sometimes of tuberculosis, has been the most that could be given the patient. Manipulation under anæsthesia was usually a failure. The elbow-joint was the one exception, resections being done on the elbow with excellent results. Of late years Murphy (42) has steadily operated on cases of ankylosis of the knee, hip, elbow, etc., in many instances with astonishing success. Not all cases in other hands have been successful, but here and there a good result has spurred men on to increased efforts. Baer (43) has also been working on these cases, using chromacized pig's bladder to interpose between the raw surfaces, where Mur-

phy uses flaps of tissue obtained from the operative field or elsewhere on the same individual; e. g., the fascia lata of the thigh. These operations for mobilizing joints have not been generally undertaken and are still sub judice in the minds of most operators. Better, however, than performing arthroplasty is the prevention of ankylosis. Murphy mentions the injection of formalin in glycerin and the maintenance of extension to prevent the deformities so often seen in these cases. Many of the joints, if stiff, in the proper position are so useful that patients do not deem it necessary to submit themselves to an operation.

#### FRACTURES

The treatment of fractures, while not relegated to the orthopedic surgeon, for many reasons still falls naturally into his hands. His knowledge of the deformities which frequently follow a bad fracture, particularly those in or near a joint, causes him to treat all of them as "potential deformities" (Jones, 44). The treatment of recent fractures is generally divided into operative or non-operative. There is an abundance of literature on the subject, and the general trend is to treat conservatively those cases that may be reduced and held so as to insure a good functional result. The operative treatment is used in cases that cannot be held in any other way. The use of the bone-graft greatly aids the treatment of non-union. A report of the Committee on Fractures (British Medical Association, 45) is very valuable and as concise as could be expected when the cases were gathered from many surgeons. The committee reported that the nonoperative treatment in children gave almost as good results as the operative treatment. After childhood better results were obtained by the operative method, though the group of cases reported was small. Later operations for deformities following the non-operative treatment do not give nearly as satisfactory results as early operations for the same bad type of fractures. Sampson (46), using Lane's careful technique, in 47 cases of fractures in children was able to procure 97 per cent perfect functional results and 88 per cent anatomically perfect functional results. Success has been reported in the intracapsular treatment of fracture of the neck of the femur by the abduction method of Whitman (47). The longitudinal and lateral traction of Ruth and Maxwell has also been used effectively (48).

#### INFANTILE PARALYSIS

Infantile paralysis still continues its ravages. A severe epidemic in lower California with a

mortality of 25 per cent has been reported by Patterson (49). The prophylactic measures used have not seemed very effective. Rosenau (50) reviewed the Massachusetts State Board of Health Report, which points to the stable fly as the principal carrier. Sawyer and Herms (51) transmitted the disease by this fly from monkey to monkey in seven cases. Neustaeder (52) reported the disease contracted by two guinea pigs, though not by direct inoculation. The guinea pigs were living in a cage directly beneath a monkey which had poliomyelitis with a nasal discharge and typical paralysis. As pointed out by the editors of the Fourth Report in Orthopedic Surgery (53), this is particularly interesting, for all the previous infections of animals have been by direct inoculation, never by contact infection. Flexner and Noguchi (54) have succeeded in growing globoid bodies, with which they have produced

typical paralysis in monkeys.

The transplantation of tendons in cases of infantile paralysis has been advocated for some time. Too much was expected of the procedure, and many were disappointed in the results because they did not take into consideration that a tendon in which the muscle is weakened is often transplanted, and that it is being placed in its new bed at a mechanical disadvantage. However, the transplanted tendons generally have sufficient strength to assist in establishing stability. Those in the leg and foot have generally been more satisfactory than those in the arm and hand, where the movements are more delicate and intricate. Wherever possible, the bony or perisoteal implantation of the tendon, as recommended by Drobnik (55) and Lange (56), is insisted upon by many. Vulpius (57), on the other hand, believed that for general use the union of tendon to tendon was the best method. All writers of experience warn against tendon transplantation before orthodox orthopedic treatment has been carried out to prove that the muscles called paralyzed really are hopelessly useless. The wearing of apparatus to remove all tension on paralyzed muscles, and thus allow return of function, should be insisted upon. The social status of the patient in many cases determines as to whether or not an arthrodesis is preferable to tendon transplantation. Lewis and Davis (58) have reported cases of free transplantation of fascia to replace tendons which suggest that it might be used to elongate tendons too short for transplantation. Gallie (59) has had good results in retaining paralyzed feet in position by cutting the paralyzed tendons and fastening the distal end to the tibia or fibula.

Volkmann (60) in 1870 said: "No one has yet succeeded in restoring the continuity of the path from the nerve-center to the motor apparatus nor is it likely that this ever will be accomplished." Vulpius (57) says that "the impossible is to-day within measurable distance of attainment and nerve-transplantation has passed beyond the stage of interesting experiment." Stoffel (61) of the Heidelberg Clinic has undertaken to work out the anatomical structure of certain of the nerves so that the surgeon may definitely know where the fibers to certain muscles are to be located. Vulpius (57) in his work takes up the individual nerves and describes them. The operation has not been generally adopted, probably due largely to the difficulties of accurately isolating the fibers and the extremely definite anatomical knowledge necessary. On the whole, the results have not been as satisfactory as those of tendon transplantation.

#### SPASTIC PARALYSIS

In the treatment of spastic paralysis Foerster's (62) operation of resection of the posterior nerveroots has attracted wide attention. Technically it is a somewhat difficult procedure and requires definite anatomical acquaintance with the region. Foerster gave the mortality as 8.5 per cent. He emphasized that the operation should not be used indiscriminately, that only severe cases where all the muscles of the extremity were more or less involved should be operated on, and that many of the mild cases where one group of muscles was mainly at fault should be treated conservatively by tenotomies, training, etc. Epilepsy contraindicates the procedure. Werndorff (63) advised that the deformities and contractures be eliminated as much as possible before the operation was undertaken. In many cases this will be sufficient. Jones (64) stated that this operation had a limited field and reported excellent results from division of the adductors and the maintenance of abduction, to be followed by educational methods. Gaugele and Guembel (65) were not enthusiastic over the operation.

#### SARCOMAS

In the management of sarcomas the present tendency is toward conservatism, for the results of amputations in the malignant sarcomas have been unsatisfactory, while the results of conservative treatment have been practically as good. Bloodgood (66) was probably the first to take the definite stand that giant-cell sarcoma should be treated conservatively for, though pathologically they might be considered malignant, as far as the

life of the patient is concerned, they are benign. He advised curetting and transplantation of bone to hasten healing. His views were supported by traced cases. He suggested the substitution of the term "giant-cell tumor" for "giant-cell sarcoma." Coley's (67) work has attracted much interest, and his results with the use of the toxin demand attention. By the use of the toxins of erysipelas and bacillus prodigeosis he seems to have held the disease quiescent for years in a case of round-cell periosteal sarcoma. He did not, however, recommend the substitution of toxins for surgery. He called attention to the difficulty of making a diagnosis between myositis ossificans traumatica and sarcoma, particularly in the femur (68). The danger of sarcoma developing in myositis ossificans should always be considered.

Cysts occur in many of the long bones, more rarely in the skull or small bones. The literature on the subject is abundant. A recent article by Elmslie (60) gave a clinical rather than a pathologic classification of such cases. His report was very complete, but, as he stated, it was difficult to decide whether we are dealing with new growths of bone or simply disordered growths. There is no proof that they are inflammatory in origin. The treatment is conservative even though it may be necessary to curette more than once.

#### CONGENITAL DISLOCATION OF THE HIP

Much has been said on antetorsion of the upper end of the femur as a factor in congenital dislocation of the hip. Lorenz (70) interferes only in cases with marked antetorsion, doing an osteotomy just above the knee. Galeazzi (71) places more emphasis on this condition, reporting 30 successful cases. He rotates inwardly, flexes and abducts, putting pressure on the greater trochanter.

Ludloff (72) is an advocate of the open operation in resistant cases. Sherman (73) advocates the open operation in all cases. He reports 20 hips reduced by incision with no subsequent osteotomy. Of these, 8 have gone into anterior transposition, 3 have stable reposition, but have developed coxa vara; one has become completely ankylosed with no demonstrable infection; in one, infection caused death; 4 were not traced; 12 have functionally normal joints; showing 41.3 per cent successful results. He has reduced 27 hips by incision with an osteotomy following. Of these, 2 have gone in anterior transpositions; in 2 the nail failed to hold the upper fragment and the parts returned to their original conditions; 3 are still under treatment; 19 have functionally normal joints. In this group he has 70.3 per cent

of cures. One of the chief reasons for Sherman's advocacy of the open operation is that the capsule so often shows a constriction too small to admit the finger and much too small to allow the femoral head to pass through it into the acetabulum. Practically it is not proved that this operation is necessary, as surgeons are obtaining about the same percentage of cures by manipulative reduction. If, however, this constriction in the capsule and the antetorsion is so important, undoubtedly the more resistant cases will yield more readily to the open reduction and osteotomy.

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#### RADIUM AND MESOTHORIUM IN UTERINE CANCER

By HENRY SCHMITZ, A.M., M.D., CHICAGO

IN 1879, Sir W. Crookes discovered the cathode rays. He exhausted the air of a glass tube more completely than had ever been done before, bringing down the pressure of the contained air to about one-millionth of an atmosphere, practically a vacuum. He then forced a current of electricity through the tube and made the discovery that the current was transmitted through the tube as a shower of extremely minute particles which, starting from the negative pole or cathode, traveled in straight lines and caused a beautiful fluorescent glow on the glass walls facing them. Crookes called these flying electrified particles "the cathode stream." We now know that these tiny particles are electrons.

In Germany, in 1805, Professor Röntgen made the memorable discovery of the X-rays. He found if the cathode stream be projected on to a solid body within a Crookes tube a vibration of great frequency is produced in this body giving rise to a radiation which is known as the X-rays. The extraordinary properties of the X-rays and their evident connection with the fluorescence of the glass of the X-ray tube led experimenters to study other phosphorescent bodies for the same type of radiation. In 1896, while studying the fluorescence of uranium, Henri Becquerel discovered radio-activity. In 1808, Schmidt found that thorium and its compounds were radioactive; and in 1900, Debierne found that actinium was also radio-active. But the most important discoveries were made by the Curies, in 1898, when they obtained radium from pitchblende, the substance being two million times more active than uranium. In 1007, Hahn discovered mesothorium. Radiotreatment experienced thereby an added stimulus, as the substitution of mesothorium for the rare and expensive mineral radium was made possible. Radio-activity is an atomic property observed in a few substances. Its elements liberate an energy which is characterized by the production of corpuscular and ethereal rays, heat, light, and electricity. The discharge of this energy is an essential property of the atom of the substance and results spontaneously; i.e., without ex-traneous cause.

At present, thirty radio-active elements are known. Three of these are gaseous: viz., radium emanation, thorium emanation, and actinium emanation. The others are solid bodies. The most important are those possessing the highest atomic weights: radium, 226.5, thorium, 232, and uranium. 230.

The radio-elements are divided into two large groups or families — uranium and thorium. The radio-active substances are found in nature in very minute quantities in the mineral deposits in which they and uranium are contained. These are chiefly pitchblende and carnotide for radium, and monazite for thorium. Radium is the only markedly radio-active element which has been obtained in its pure state.

Unchangeable radio-active elements do not exist, as each element undergoes in the course of time more or less rapid disintegration or decay. The elements of one family are related in the sense that one group, by the discharge of radio-active energy, is transformed into the other. The result of this transformation is that elements of an always lower and lower electropositive character are formed. (See Table I.)

The radio-active energy consists of a radiation consisting of three distinct kinds of rays which have been called by Rutherford  $\alpha$ -,  $\beta$ -, and  $\gamma$ -rays. By the discharge of  $\alpha$ -rays, radium is gradually formed from uranium in the course of some thousands of years; radium emanation is formed from radium by a continuous giving off of  $\alpha$ -particles, and from this, radium-A, -B, -C, -D, -E, and finally -F is derived. The more rapidly the transformation results, the greater is the penetrating power of the discharged  $\alpha$ -particles and the greater the velocity of the  $\beta$ -rays. The emission of the  $\alpha$ - and  $\beta$ -rays is coincident with a spontaneous liberation of electricity.

The duration of the life of the radio-elements varies from a few seconds to millions of years. By the half-period of radio-activity of a radio-element is meant the time required for the radio-activity to decrease to half value.

The  $\alpha$ -rays are positive corpuscular rays or helium atoms with a positive charge. The discharge of each helium atom signifies a loss of atomic weight by the parent atom of four, which is the atomic weight of helium. This knowledge enables us to calculate the ultimate results of this disintegration—for instance, in radium. In the course of time, a radium atom gives off five  $\alpha$ -rays—that is, five helium atoms; in other words,

the atomic weight of radium, which is 226.5, is decreased by 5×4 or 20 in this transformation and we obtain as the end-product of radium a body whose atomic weight is 226.5-20, or 206.5. The atomic weight of lead is 206.9. This simple arithmetical example shows that the precious radium is finally transformed into lead. A similar calculation demonstrates that thorium is finally converted into bismuth.

The B- or Becquerel-rays are negative corpuscular rays; viz., electrons. They are cathode rays existing in a natural state and are analogous to the rays which emanate from a cathode in vacuo and which, on striking a solid body, produce as secondary rays the X-rays. The  $\beta$ -rays are distinguished from the cathode rays appearing in cathode by the fact that they have a third greater velocity and therefore a larger penetrating power. The  $\beta$ -rays of one and the same substance do not possess the same velocity, but possess different velocity groups, which, however, are characteristic of the substance. The degree of velocity determines the penetrating power of the rays. The  $\gamma$ -rays possess a considerably greater penetrating action than the X-rays; they never occur alone, but always in the company of the  $\beta$ -rays. The penetrating power of the  $\gamma$ -rays is about one hundred times greater than that of the hardest  $\beta$ -rays. It is impossible to take clear radiographs with the  $\gamma$ -rays, as they are absorbed very little more by the osseous than by the soft tissues. The penetrating power of the  $\gamma$ -rays of the different radio-active substances varies. The  $\gamma$ -rays, as well as the  $\beta$ -rays, produce secondary rays on striking a solid body.

An emanation is the direct product of decay of a radio-active element. A radio-active atom decomposes by the expulsion of an  $\alpha$ -particle; i.e., a helium atom into an atom of radium emanation. It is a gas which emits  $\alpha$ -rays, and

forms again into a solid body.

The amount of radium emanation in equilibrium with 1 gm. radium element is designated one curie. The volume of this amount of emanation is 0.6 cmm. The 1/1000 part of one curie is one millicurie. The content of radium emanation in different solutions is designated as macheunits, referable to one liter of the dilution. One curie emanation equals 2670 million macheunits; this means that spring water of 2.67 million macheunits activity contains in one liter the emanation which equals the weight of one milligram of radium.

The velocity, intensity, and penetrating power of the rays are of importance therapeutically.

The velocity of the a-rays is only one-tenth to one-twentieth of that of light. The velocity decreases rapidly with the distance from the source, and when the value of the velocity has sunk beneath a certain amount the a-rays lose certain properties which were present at the outset. This function of distance is known as The ray loses, for example, its photographic action, its fluorescence, and finally its ability to ionize gases; i.e., to make them conductors for the electric current when the latter passes through them. As the a-rays are atoms and possess a considerable size, they penetrate material bodies only with great difficulty. For instance, heavy glass or a thin metal plate are almost impenetrable to them. If a-rays act directly on the skin, they are absorbed in the most superficial layers and do not advance to any greater depths. During their absorption, they are probably capable of producing secondary rays, corresponding in this respect to the  $\beta$ -

The behavior of the  $\beta$ -rays is entirely different. Their velocity is about the same as that of light; their intensity and penetrating power are markedly greater. The two kinds of  $\beta$ -rays, known as hard and soft rays, are of different penetrating powers. A piece of lead 3 mm. thick will absorb the  $\beta$ -rays. They are not only absorbed but also produce secondary rays which closely resemble the  $\beta$ -rays but have a very much reduced power of penetration.

The  $\gamma$ -rays pass through a lead plate 1 cm. thick. In fact, the  $\gamma$ -rays emitted by 30 mg. of radium bromide are capable of penetrating a

steel plate 30 cm. thick.

When solid bodies, especially metals, are penetrated by rays from radio-active bodies, a new kind of ray is formed, which is analogous to the secondary X-rays which were discovered by Sagnac. A-rays are not capable of producing secondary rays;  $\beta$ -rays, on the contrary, produce very active secondary rays which are at times more powerful than the producing  $\beta$ -rays. The secondary rays are  $\beta$ -rays, but of a lesser velocity than their producers. They represent new electrons resulting from the absorption of the electrons which formed the primary rays. The X-rays, also, produce powerful secondary rays which are identical with  $\beta$ -rays.

The secondary rays produced by the same primary rays are more intensive, the denser the attacked metal. Eve and Townsend obtained the following numbers of the relative intensity of the secondary rays for different substances, produced by  $\beta$ - and  $\gamma$ -rays,  $\gamma$ -rays, and X-rays.

Substance	β- and γ-rays	γ-rays	X-rays
Lead	100	100	100
Copper	57	6 <b>1</b>	207
Brass	57 58	59	297 263 282
Zinc	57		282
Aluminum	30	30	25
Glass	31	35	31
Paraffin	12	20	125

TABLE I.

	Half-Time Period	Variety of Rays	Intensity of Rays in Air
Uranium I Uranium X1 (Uranium Y) Uranium X2 Uranium 2	5 x 109 years	Alpha Beta and gamma (Beta) Beta and gamma	
Ionium Radium Radium emana-	years 2 x 10 <sup>5</sup> years 1,800 years	Alpha	2.9 cm. 3.0 cm. 3.5 cm.
Radium A Radium B Radium C	3.85 days 3 minutes 26.7 minutes 19.5 minutes	Alpha	
Radium C <sub>1</sub> (Radium C <sub>1</sub> ) Radium D	Fractions of a second	Alpha, beta, gamma (Beta) Very soft beta and gamma	
Radium E Radium F, or Polonium Lead?	5 days	Beta	

Radium is the most important and the best known radio-active element. It is derived from ionium, a product of decay of uranium, and therefore occurs in all mineral deposits containing uranium. It belongs to the group of alkaline earths analagous to barium, with which it was first separated from pitchblende by Madame Curie. The atomic weight of radium is 22.65; the atomic weight of uranium is 238. If we subtract from the latter the  $\alpha$ -rays or helium atoms, of which many are given off from uranium2 and ionium, the atomic weight of radium is obtained:  $238-3\times4=226$ .

TABLE II. THORIUM.

	Half-Value Period	Variety of Ray	Intensity of a-Rays in Air
Thorium	1.3 x 10 <sup>10</sup> years 5.5 years	Alpha	2.72 cm.
Mesothorium II Radiothorium	6.2 hours 2 years	Beta and gamma Alpha	3.9 cm.
Thorium X Emanation	3.65 days	Alpha and beta	5.7 cm.
Thorium A	o.14 seconds	AlphaBeta and gamma	
Thorium C (C <sub>1</sub> +C <sub>2</sub> )	60.5 minutes	Alpha and beta	5.0 and
Thorium D			8.6 cm.
	J	area area Buttanaiii	

Thorium, the beginning member of the second family of radio-active elements, belongs to the rare earths, has an atomic weight of 232.4, and decreases to one-half its weight within 1,000 millions of years by the emission of  $\alpha$ -rays. It is obtained from monazite found in Brazil. The immediate product of decay is mesothorium, with which we charge both mesothorium I and mesothorium II. The half-value period of mesothorium I is 5.5 years, that of mesothorium II, 6.2 hours. Mesothorium I equals mesothorium II within a few days after its production.

Mesothorium I, in its chemical behavior, is identical with radium and is therefore obtained by a similar process. One thousand kg. of monazite give 2 to 2.5 mg. mesothorium bromide. while from 1,000 kg. pitchblende about 2 cg. radium bromide are obtained. Mesothorium always contains radium, which cannot be separated from the mesothorium. The percentage of radium in the combination is 25. The radioactivity of mesothorium increases at first, but within 3 years it reaches its maximum; it then decreases slowly and in about 10 years it reaches its half-value period. The presence of radium. however, decreases the time of decay of radioactivity, so that 16 to 18 years pass by before the value of the radio-activity is one-half what it was at the time of the production of the mesothorium. Finally, if all the mesothorium should decay, the 25 per cent of radium would remain.

The radio-activity, and thereby the amount of radio-active substances, is determined by measuring the ionization which their rays produce. The electroscopic method is the simplest. time which is necessary to produce a definite reduction in deflection can scarcely be measured: the stronger the rays are, the stronger must be the ionization and the more rapid the results of the discharge of the electroscope. The intensity of the radio-activity is under the same conditions inverse to the time of discharge. The electroscope must be constructed differently according to whether one desires to measure  $\alpha$ -,  $\beta$ -, or  $\gamma$ -rays. Y-ray electroscopes must have walls of at least 3 mm. thickness of lead to positively exclude all  $\beta$ -rays. The standard of comparison is a known radium standard. All the important radioactive substances are measured according to known radium standards. This means that if the amount of mesothorium is 1 mg., the  $\gamma$ -rays of this mesothorium preparation produce the same ionization as 1 mg, radium bromide provided the conditions of the experiments are the same.

The  $\alpha$ -rays have slight penetrating power and are absorbed at the surface of the body. The  $\beta$ -rays, representing free electrons and consisting of hard and soft rays, penetrate about 7 mm. into

the tissues before they are completely absorbed. The  $\gamma$ -rays have the greatest penetrating power. Their coefficient of absorption by all substances is about 100 times less than that of the  $\beta$ -rays. The  $\gamma$ -rays, also, produce in the tissues in which they become absorbed, secondary rays mostly resembling the soft  $\beta$ -rays.

The biologic action of the different rays has been admirably studied and described by H. Dominici (8), of Paris, whose paper is herewith

reviewed.

The application of r cg. of pure radium sulphate in a flat applicator of 4 sq. cm. to the skin of a healthy animal will produce within three weeks three varieties of changes distributed to three different zones of the body as follows:

1. A necrosis in the epidermis and cutis, the zone in which the greater part of the rays is absorbed; that is, all of the  $\alpha$ - and soft  $\beta$ -rays.

2. An intense proliferation and retrogression to the embryonal state of the cells in the subcutaneous tissues and fascia. This zone has absorbed a smaller quantity of the rays than the preceding one; i.e., the medium  $\beta$ -rays.

3. Metabolic changes in the aponeuroses, muscles, and even the osseous tissues. The ultrapenetrating  $\gamma$ - and  $\beta$ -rays become absorbed

in this zone.

Five or six weeks after the application of the radium, the epidermis and cutis resume their former state, while the other tissues do not return to normal for six to eight months.

This simple experiment shows —

r. The variety of the biologic action of the rays: necrosis, excitation of proliferation, embryonal retrogression, metabolic changes.

2. The connection which exists between the nature, intensity, and extent of the disturbances produced in the surface integument and the quantity of the rays absorbed by the skin in a given space of time; but it does not prove that these changes absolutely correspond to the absorption or amount of the rays. The susceptibility of organic tissues to change by the rays and the liability of animals and plants succumbing to the action of infectious agents is termed the receptivity or sensitization of cells.

This receptivity of organic tissues toward the rays depends under normal conditions, at least in part, on their age, which must be determined from their momentary phase of development as well as from the time of their formation in the

organism to which they belong.

Therefore, cell elements which are in an embryonal or indifferent state — basal cells of the epithelium and the hair follicles, lymphoid cells,

embryonal sex cells—are destroyed by an application of radium which would excite only a simple reaction or metabolic changes in the surrounding mature tissues. Thus cells of the hair papille, lymphoid cells, spermatozoa, and graafian follicles are killed by the rays, while the surrounding cells remain intact.

The receptivity of cells, however, depends not only on their age but on their species and the varieties of the latter in the same organism and on the accidental changes of a pathologic nature.

According to Danisz, the differentiated elements of connective tissue are much less influenced by the ray than the adult cells of another species; for instance, those of the skin and mucous membrane. This difference in the behavior of the cells toward the rays is also found in their embryonal state, although their undifferentiated condition might imply the same receptivity.

The young cells of the basal layer of the epidermis perish much less readily than those of the papillæ of the hair follicles; they are different

varieties of the same species.

Homologous elements are more or less receptive, depending on the age of the organism to which the cell elements belong. The tissues of the child are much more easily altered than the corresponding structures of the adult.

The influence of age and species or variety of species is further observable if the sensibility toward the rays is concerned with tissues pathologically changed by tumor formations or inflammatory processes, unless these pathologic processes change the receptivity of the cells, as they may alter their morphologic development and their nutrition.

Depending on their age, the following neoplasms belong to these radiosensitive tumors: ectodermal and basal-celled epitheliomata of Darrier and Krompecher, the morphologic structures of which resemble the basal layers of the epidermis; lymphadenomata, derived from embryonal lymph-cells, which remain embryonal; sarcomata, which ordinarily proliferate from adult fixed connective-tissue cells (the latter reverting to their embryonal form after they have resorbed their products; i.e., connective-tissue fibrillæ and cartilaginous and osseous tissues); fibromata, whose fibroblasts are present in very large numbers and remain in their young state, instead of changing into adult fibroblasts and producing connective-tissue fibers.

On the other hand, squamous-celled epitheliomata, the cells of which grow with the formation of epithelial cones; fibrosarcomata; chondrosarcomata; osteosarcomata, the cells of which attain a relative maturity with the formation of fibers; cartilaginous and osseous substances; and fibromata with atrophic fibroblasts, which are found dispersed in small numbers in the extensive fibrous masses, remain refractory to the rays.

The law of age is apparently contradicted by certain tumors in which the embryonal cells are just as refractory as the adult cells, or in which the adult cells are just as sensitive as the embryonal elements. An example of the first instance is the tuberous nevus, the retrogression of which is with difficulty attained in spite of radium and röntgen rays. The resistance toward radium is not only shown by the highest differentiated cells but also by those least developed which are refractory toward a ray otherwise capable of destroying embryonal cells. An example of the second category is represented by horny epitheliomata, fibrosarcomata, chondrosarcomata, and osteosarcomata, the receptivity of these being greater than that of most of the remaining tumors of the same varieties.

To conclude, the two great factors in the receptivity of tissues—age and origin—receive consideration in the development of the tumors; but their influence is often changed, diminished, or reversed by neoplastic processes which change the cells in such a manner that the latter conduct themselves as if they belonged

to another species or variety.

Inflammatory processes also modify the receptivity of the tissues, for they destroy their growth and change their structure, thereby distorting the specific character of the tissues.

The resistance of the skin toward the destructive action of the rays is increased by many chronic inflammatory conditions, but it must be remembered that the relative immunization of the tissues against the necrotic action of the rays may be coincident with a sensitization of their stimulating, evolutive, and metabolic properties.

Therapeutic raying irritates but does not destroy the young granulating cells of torpid, badly cicatrizing wounds. It heals superficial or deep inflammatory processes, sparing the overlying skin. It atrophies keloids of the body surface, conserving the epidermis laying over them; for this reason, the cure of most of the inflammatory conditions which are amenable to radium treatment requires without exception a dose of rays which produces marked caustic effects.

Radium treatment is indicated in scrofulodermas but contra-indicated in most inflammatory lesions, in which weak rays that could kill neither the organic element nor the pathologic bacterium produce a retrogression and a cicatrization. The radium acts by changing the conditions of the affected area so that the latter becomes ill adapted as a nutritive media for the growth of pathogenic germs. This modification consists in a renovation of the chemical composition of the cells and the intracellular stroma.

The action of the rays on neoplastic tissue is of an impeding, destructive, or evolutional char-

acter.

The rays impede the growth of the diseased cells before they destroy them, so that the cessation of the growth of the tumor-cells always precedes the absorption of the tumor elements.

The destruction of these elements is either a direct or an indirect one. In the direct form, the tumor-cells become necrotic, their cytoplasm and nucleus disintegrate and dissolve without any change occurring in their morphologic structure. In the indirect form, a metamorphosis, which is comparable to that produced by the röntgen rays, precedes the cell absorption. The metamorphosis consists of a hypertrophy, often a gigantism of the nucleus, nucleolus, and even the centrosomes, which increase like pseudoparasites. The metamorphosis of tumor-cells is the sign of an abnormal development which the rays force upon them and which shortens the duration of their life, for very soon death of cells and absorption occur.

The evolutional action of the radium produces a still more important process. It causes a retrogression of a part of the cells of the malignant tumors to their normal adult state. To understand the possibility of such a process, we must have a clear conception of the mechanism of the formation and growth of cancer-cells. The neoplasm deprives the cells of their function, especially that of becoming a part of the normal tissue layers. They become "strangers" to themselves and to the cells belonging to the same species and varieties. The growth is not only the result of the proliferation of a single cell group, but other cells also take part in this proliferation, which cells in the beginning were spared and which have gradually become in-

cluded in the cancerous tumor.

The rays are capable of producing an effect directly opposite to the neoplastic process; i.e., they destroy the cells or inhibit their growth, but also return to them their prior normal function.

The therapeutic action of radium depends on the amount of radium used, the duration of exposure, and the kind and thickness of the filter. Radium rays destroy tumor-cells either directly or indirectly, as mentioned before; but

finally the rays remove the tumor. However, we must make one presupposition: the rays really must reach the tumor with a sufficient intensity and the tumor must not have become disseminated by metastatic formations through distant parts of the body. Some cancers can be cured by a variety of methods, others not at all. The removal of the tumor does not mean the cure of the cancer, because the cure of a cancer signifies the death of all, absolutely all cancerous foci and cells present in the body. Therefore we must sharply distinguish between an anatomic and a clinical cure. In an anatomic cure a recurrence is impossible, because all the cancercells become destroyed if metastases are not present in the abdominal organs, ovaries, liver, etc. In a clinical cure the cancer has been improved only so far that clinically we cannot demonstrate anywhere the primary tumor and its metastases.

By the use of a correct filter technique the action of radium on tissues may be controlled, so that either  $\alpha$ -,  $\beta$ -, or  $\gamma$ -rays, or a combination of them, may attack the diseased area, as the action of  $\alpha$ - and  $\beta$ -rays is only superficial; they may be dispensed with and only the deep penetrating hard  $\beta$ - and  $\gamma$ -rays used. For instance, a layer of cardboard will arrest the a-rays, while a pure lead filter of 3 mm. thickness will absorb all of the a-rays and the soft and medium  $\beta$ -rays. In gynecological work we do not use the a- and soft  $\beta$ -rays at all, and therefore always use a lead filter of 2 or 3 mm. thickness. The secondary rays which form in the filter are best absorbed by surrounding the metal filter with a cover of pure elastic rubber. Other substances which may be used as filters are gold, silver, platinum, and brass — 0.6 to 0.8 mm. gold, or 0.5 mm. platinum, or 2 to 3 mm. silver, or 1 to 1.5 mm. brass correspond to 2 to 3 mm. lead.

The dosage of radium is very important. A dense, heavy stream of rays emanating from radium or mesothorium contained in the smallest possible compact mass has a much more intensive action than the same amount of radium or mesothorium distributed over a large area.

Further, an entirely different result will be obtained from a large amount of radio-active substance applied at intervals for short periods of time than with a small amount of radium applied a correspondingly longer time. In other words, the action of 50 mg. of radium element for 100 hours; i.e., 5,000 milligram-hours is entirely different and more intense than the action of 5 milligrams of radium element for 1,000 hours. The same result cannot be obtained with a small

amount by a longer continued exposure than can be obtained with a large amount within a correspondingly shorter period of time. Small doses stimulate growth and cause hypertrophy of tissues, while necrosis and death of cells can only result from the use of large doses. This fact is of practical importance. We stimulate the proliferation of a cancer and thereby render the patient worse by the use of small amounts of radio-active substances. However, a necrotization of the tumor and thereby a curative action is obtained only by the application of large amounts of rays. These facts correspond to those obtained by the use of the X-rays. Soft rays, in small amounts, stimulate the cancer to rapid proliferation, while a large amount of hard penetrating filtered rays applied within the shortest possible length of time have the opposite effect; that is, inhibition of growth and death of the cell. Foveau de Courmelles (9) uses 10 to 50 mg, of pure radium in monthly applications of 6 to 24 hours. Döderlein (16) precedes the treatment by an excochleation of the neoplasm, and then applies 100 to 150 or 200 mg. mesothorium until from 3,000 to 6,000 milligram-hours, and even 36,600, are used. He uses gold and lead filters. Jung (5) uses 100 mg. mesothorium in 2 mm. lead filters. With 30 to 36 mg. mesothorium, Kroemer (4) succeeded in changing the cancer tissue into a connective scar tissue free of any cancer-cells. Krönig uses up to 800 mg. mesothorium with heavy filters. He considers 200 mg. the minimum amount for a successful raying. Nahmmacher (30) obtained good and rapid results from the use of 30 to 100 mg. of radium. Pinch uses 50 to 100 mg. of radium filtered through a 2 mm. lead and a 3 mm. rubber filter. Each séance lasts 30 to 60 hours, given within 5 to 10 days. The applications are repeated every six weeks. Schauta claims that amounts above 100 mg. radium or mesothorium should not be used on account of the danger of latent formation of vesicovaginal or rectovaginal fistulæ. Sticker (3) uses amounts of 500 mg. or more. Smaller amounts do not penetrate sufficiently deep. He claims that mesothorium does not penetrate as deeply as radium. Wickham (23) has 19 centigrams of radium at his disposal and claims good result from about 2,000 milligram-hours' application, the radio-active substance being strongly filtered.

It is almost a settled fact that less than 50 milligrams of radium element or mesothorium of the same activity should not be used in gynecological work. It is deplorable that the different authors do not make it clear in their papers

whether they mean to indicate the amounts used as being radium element or its salts. Ten mg. of radium element represent 17.076 mg. of Ra Br, or 13.138 mg. Ra Cl., or 14.2 mg. of Ra SO<sub>4</sub> or 12.655 mg. Ra CO<sub>3</sub>; in other words, 17.076 mg. Ra Br, or 13.138 mg. Ra Cl, or 14.2 mg. Ra SO<sub>4</sub> have the same radio-activity as 10 mg. of radium element.

A qualitative difference in the clinical action of X-rays, radium, or mesothorium rays does not exist essentially. They have the same curative action if used in the same amounts. The  $\gamma$ -rays are far superior to the X-rays in the intensity of penetrating action. This intensity is about 40 times stronger than that of the hardest X-rays. Clinical results coincide with this fact. The lesser intensity of the röntgen rays likewise cannot be overcome by an increased duration of

their application.

The histologic changes which occur in the cancer tissue under the influence of the rays are as follows: During the first three weeks a hyperæmia and numerous typical and still more pronounced atypical mitoses are found. Then follows the metamorphosis characterized by an enlargement and vacuolization of the cancer-cells, retardation, and finally cessation of the division of the cell nucleus, then destruction of the nucleus and cell protoplasm, and, finally, destruction of the cells. There is a simultaneous new formation and increase of the connective tissue succeeded by a sclerosis and hyaline degeneration of the fibrillæ. On macroscopical examination of a piece of tissue, a narrow zone of necrotic tissue is seen on the surface, beneath this a layer of granulation tissue and degenerating cancer-cells, while in the deeper tissues areas of apparently normal and degenerated cancer-cells are seen. Whether these cells are capable of proliferation or are destined to perish cannot be proven on the microscopic examination. The destroyed cancer tissue is replaced by granulating or sclerotic, hyaline degenerated connective tissue. The musculature atrophies and disappears almost entirely. The blood-vessels show a hyaline degeneration of the adventitia and media. An obliteration of most of the blood-vessels is caused by a proliferation of the intima. The changes in the blood-vessels are considered by most authors as of great importance on account of the sudden disturbance of the nutrition of the tissues.

The changes in the objective condition of the patient caused by the use of radium or mesothorium are: (1) a restitution of the uterus to its former normal shape and form, (2) a disappearance

of the infiltration in the parametrii, and (3), a recurrence of the former normal movability of the uterus. In fact, an inoperable cancer is made operable within about 3 to 4 weeks by the use of 3,000 to 4,000 milligram-hours of radium or mesothorium.

The changes in the subjective condition of the patient correspond to the local action of radium. They are cessation of hæmorrhages and putrid discharges, disappearance of pain, improvement in the general condition of the patient; i.e.,

disappearance of the cachexia.

The primary action of radium in this disease is really beyond the fondest hopes of its most ardent supporters. By its use many sufferers may be given a new lease on life. This fact probably has led many a gynecologist to prematurely pronounce the radio-active treatment of cancer as curative, while it is only a symptomatic cure. It will take at least three more years of the most painstaking clinical observations before a final statement can be rendered.

In a few of the reported cases, a very late action of radiologic treatment on cancer has been reported. Döderlein (16) mentions the case of a patient who had been treated for four weeks with mesothorium without any apparent success. Six weeks afterward the patient appeared for an examination and was found to be completely cured. Metastases and cancerous foci lying more than 4 to 5 cm. distant from the radium capsule remain entirely unaffected by the radium. Others again—Freund, Henkel, Krönig, Veit, and others—positively believe in a distant action of The latter may be explained by the action of antibodies formed in the primary tumors by the action of the rays. They become absorbed by the blood stream, through which they are carried to the deep lying foci and metastases, where they act in a chemical manner. The chemotherapy of cancer is based on a similar supposition.

General disturbances of health observed during the raying are nervousness, headache, lassitude, loss of appetite, fever, albuminuria, stomach and bowel distress, vomiting, diarrhœa, pain in the

bladder, rectal and vesical tenesmus.

Many authors support radium treatment with the application of large doses of hard X-rays to reach distantly lying metastases. Others combine with these intravenous injections of borcholin, colloid metals, to increase the action of the rays and thus decrease the time of exposure to the rays. Allmann (36), Krönig (20), Bickel (1), Opitz, Werner (40), and Ascher, recommend and use them. Thorium X, solutions of radium salts, have also been recommended for intravenous use to support the local action of the rays.

Prophylactic raying after operations to prevent recurrences is recommended by all the workers in this field. Gauss (7) reports 21 such cases, 20 of which have remained free of recurrences up to six years post operationem, while the usual percentage of recurrences after operations without radiologic treatment is sixty within the

first year following the operation.

The question of whether inoperable cases of cancer of the uterus become operable after radium treatment is answered in the affirmative by some observers, while others deny it. This action, however, may be only an apparent one. Inflammatory and not cancerous infiltrations may disappear in the neighborhood of the cancer. However, Sigwart describes a case of inoperable uterine cancer in which a bulbous cedema of the entire base of the bladder disappeared after radium and mesothorium treatment. The carcinomatous cervix reassumed its normal shape, and the case became operable. The disappearance of the bulbous cedema should prove the retrogression of the cancer. Franz considers the radium treatment of value in the purification of decaying cancers before operation and the rendering of inoperable cases operable by the disappearance of the infiltration. Wickham (23) claims the same results.

The action of radium on recurrent cancers is beneficial according to some observers, as Abbé, Grinsbaum, Latzko, and others. Abbé (11) reports a case which has remained free from recurrence for 8 years. Grinsbaum noted the disappearance of a recurrent cancer the size of a fist after a raying of 5 weeks. Werner, (40) Döderlein (16), Tate (22), and others state that recurrences are much more refractory to radium

treatment than primary cancers.

The opinions of the treatment, its indications, and results reported by various authors will shed light on the value of radiologic treatment of cancer of the uterus. Krönig (12) mentions a case of an absolutely inoperable cancer in a woman who entered his clinic over two years ago in a desperate condition. She has not had any treatments for the last 18 months, has gained 30 pounds in weight, and has so far had no recurrences. Krönig (20) has had 27 cases of inoperable cancers of the uterus with a dissemination into the broad ligaments but without any metastases. These cases have been free from recurrences from 6 to 14 months and the patients have no subjective disturbances. Krönig is hopeful that some of the cases will not recur.

Radium therapy is especially successful in operable cases. Krönig (12) rayed seven such cases — all of them treated over six months ago. They have so far remained free from recurrence, while of three other cases which were subjected to a radical operation without subsequent prophylactic raying, one case already has had a severe recurrence. Krönig is inclined to believe that operable cases in particular should be subjected to the radium treatment, as the surgical treatment of cancer of the genital organs shows such bad results.

Recurrences are much less amenable to radium therapy than primary cancers; however, prophylactic rayings after radical operations are remarkably successful. Krönig has 20 cases which were rayed after a radical operation: 17 of the cases have been discharged from 18 to 36 months ago; 19 cases have remained free from any recurrences. If we consider that a recurrence after a surgical operation occurs under usual conditions within one year in 60 per cent of the cases, then we must call the above results remarkable at least.

Bumm (27) is of the opinion that radiotherapy produces in inoperable cases an improvement, in operable cancers a positive local cure. During the last year he has been using prophylactic raying after every radical operation—so far, with very good results. Of 108 cases of cancer, among 40 operable cases 15 have had recurrences. However, the time of observation has been too short to permit of a definite final opinion. Of 12 cases of cancer of the cervix which were held to be clinically cured in August, 1912, 2 have recurred; of 4 vaginal cancers, only 2 have recurred.

The penetrability of rays has been determined by microscopic examination of specimens obtained through operations or postmortem examinations. The destruction of the cancer-tissue and cancer-cells by the rays extended down 3 to 3.5 cm.; in a depth of 4 cm. viable cancer tissue was found in spite of the administration of large doses of the rays. Cancerous proliferations are usually not thicker than 1 to 2 cm. Proliferations deeper than 3 cm. are inoperable; therefore the success of radiotherapy is most remarkable.

During 1913, Döderlein (16) treated 153 cases of uterine cancer. Thirty-one of these cases are clinically well, subjectively as well as objectively. Of these 31 cases, 12 were so far advanced as to be inoperable; 24 cases have died; 93 are still under treatment; 11 have been discharged. One patient suffered from an inoperable

cervical cancer with profuse hæmorrhages and ill-smelling discharges. She was so cachectic that her death was soon expected. She received altogether 11,630 milligram-hours of mesothorium during a period of three months. remained free from all subjective and objective symptoms for the last nine months. Cancer recurrences after radical operations are much more refractory to radiotherapy than primary cancers. Döderlein states that cancers of the female genitalia are more amenable to radium treatment than any other cancers. The reason for this is twofold: the cancers are much more accessible and the radium can be inserted into the cancerous mass, directly. Finally, strictures and contractions of the uterus and vagina are less objectionable than those occurring after radiotherapy in the rectum, bowel, or œsophagus.

Chéron and Duval (10) report 158 cases of vaginal and uterine cancer which they treated with radium during the last five years. is a large and relatively long observed collection. Chéron and Duval lay great stress on the technique and do not deny that the bad results in many cases are due to faulty technique. The chief points in their technique are: (1) Inoperable cancers of the uterus and vagina must be treated by Dominici's method of ultrapenetrating raving. (2) The ultrapenetrating method must be performed with the method of dosage inaugurated by Chéron and Duval. (3) The greater the amount of radium used, the greater the filtration must be. The value of radium treatment lies not only in the number of cures it may produce, but also in the remarkable improvements which can be obtained when all other therapeutic means are powerless. In the 158 cases there was one positive anatomical cure; 155 retrogressions, 93 of which were far reaching, and among the latter there were 46 clinical cures; only 2 cases were refractory.

Since September, 1911, Pinkus (48) has treated 38 cases of cancer among which were uterine and vaginal cancers, mammary, rectal, ovarian recurrences, cancers of the tongue and prostate. The superficial cancer nodules disappeared, but deep-reaching cancerous infiltrations remained uninfluenced. He obtained some very good results and concludes that radium treatment is indicated in operable cases in which the operation is difficult and therefore dangerous to life, as in advanced age, grave organic diseases, and all inoperable cases and recurrences. Prophylactic radium treatment after radical operation must be given for a long time to prevent recurrences. Among 38 cases, 9 clinical cures were reported.

One patient with a cervical cancer has remained free from recurrence for 18 months. The lasting value of radium treatment in cancer must be admitted.

Schauta (50) treated 16 cases of cancer with massive doses. He had no success with small doses of radium or mesothorium. He rayed cases in which an operation was difficult or contra-indicated, the inoperable cases, and, prophylactically, all operated cases. His results as reported are 5 primary successes and 11 retrogressions.

Bickel (1) subjected 30 uterine, 19 mammary, and 14 rectal cancers to radium treatment. He had one clinical cure among the uterine cancers, 5 among the mammary, and one among the rectal.

Weinbrenner (37) reported the result obtained with radium in 32 cases of cancer of the uterus. He states that a local disappearance of the cancer can be obtained more successfully by radium than by any other means excepting surgical interference. He discusses especially the influence of radium on the healing of wounds following operations performed after raying of the cancer. Healing is usually not primary and a possibility of the formation of a fistula exists on account of a hyaline degeneration of the connective tissue. Of the 32 cases of cancer treated, 17 were uterine cancers, of which 6 cases were operable. Of the latter, 3 cases were clinically healed, 3 are still under treatment. Of the 11 inoperable cases, 3 are clinically cured, 5 markedly improved, 2 are still being treated, and one case was discharged as hopeless. Of the o recurring cancers, 2 are clinically healed, 5 improved, one discharged as hopeless, and one refused further treatment. Of 2 vaginal cancers one was discharged as cured. One ovarian cancer did not improve, one vulvar cancer also was refractory. Two cancers were treated prophylactically after a Wertheim operation.

Abbé (11) reports a case of cervical cancer, which was treated in 1905 after an excochleation with 60 mg. radium. The patient has remained well ever since. Abbé has had a number of inoperable cancers (cervical) which were treated by excochleation and radium and have remained well for the last 3 to 6 years.

Kroemer (4) treated 26 cases of cancer of the genital organs; of these, 4 cases died and 17 were improved or are free from any disturbances. Eight of these cases were later operated on.

Jung (5) treated 4 cases with marked favorable results; i.e., clinical cures.

Wertheim (13) subjected 19 cases to radium and 3 cases to mesothorium treatment. Of the 19 cases, 9 were operable and 7 were afterward subjected to radical operations. The postoperative findings were: microscopically, 3 negative, 1 doubtful, and 3 positive; clinically, 6 good results and I negative result. Wertheim denies that any unusual benefit is derived from radium raying of inoperable cancer. He attributes the disappearance of the discharge and odor to the purifying action of radium. The three cases treated with mesothorium showed good clinical results, the microscopic examination showed one positive and one negative, while in the third case operation was refused.

Nahmmacher (30) deduces that operable tumors must be operated upon unless the operation is refused, and the operation must be followed by a prophylactic radium treatment. Inoperable

tumors must be rayed immediately.

Foveau de Courmelles (9) states that radium and X-rays should not to be regarded as antagonistic to surgery but as its accessory means. Radium should be used only if an operation is refused by the patient or is contra-indicated, or if the cancer is inoperable. All operations for cancer, however, should be followed by a prophylactic radium and X-ray application.

In conclusion, we may summarize as follows:

1. The action of radium and mesothorium is probably the same.

2. The smallest amount used in treatment

should be 50 mg. radium element.

3. The  $\alpha$ - and soft  $\beta$ -rays must be excluded by a metal filter.

4. The secondary rays must be absorbed by a soft rubber capsule inclosing the metal filter.

5. The amount of milligram-hours varies from 3,000 to 6,000 or more.

6. The action of the rays should be supported by the X-rays.

7. Chemotherapy must be combined with

radiotherapy.

8. Radiotherapy is indicated in (r) in operable cancers of the uterus, vulva, and vagina; (2) in operable cases where operation is refused or is otherwise impossible; (3) as a prophylactic to prevent recurrences after operations.

9. Contra-indications are: (1) advance of the "cancer disease," as multiple metastases and local extent, and (2) leucopænia of 3,000 or

less and pronounced cachexia.

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### ABSTRACTS OF CURRENT LITERATURE

### GENERAL SURGERY

### SURGICAL TECHNIQUE

#### ANASTHETICS

Meltzer, S. J.: The Present Status of Intratracheal Insufflation (Der gegenwärtige Stand der intratrachealen Insufflation). Berl. klin. Wchnschr., 1914, li, 677, 743. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author first discusses the characteristics and advantages of the intratracheal insufflation devised by Auer and himself. The basic principle of it is the limitation of the space between the mouth and the alveoli of the lungs, consisting of the mouth and nasal cavities, pharynx, larynx, and bronchi. By passing a rubber tube deep into the trachea the outer air is carried down to the bifurcation, and by the application of a certain pressure, to the smaller bronchi, and thus much nearer to the alveoli, so that a much less energetic pumping is necessary to attain satisfactory respiration.

It was found that often when the relation between the tube and glottis was not correct, a continuous uniform stream of air did not produce satisfactory breathing, and the animals then became cyanotic, but it was found that this danger could be avoided if the pressure of the ingoing air was lowered a little at intervals. It is therefore recommended that in the practical carrying out of the method, the pressure be lowered a little for about a second, 6 to 10 times per minute. Complete interruption of the air current is not necessary, and is inadvisable on

account of the danger of aspiration.

The author thinks that one great advantage of his method lies in the current of air between the tube and the wall of the trachea, which, in contrast with the natural air current and that in positive or negative pressure methods, always flows from within outward, and therefore offers an excellent protection against the aspiration of infectious materials from the mouth and nose. This fact was proved in a series of animal experiments in which coal dust was placed in the trachea, or, after previously filling the stomach, artificial vomiting was produced during the anæsthesia by the injection of apomorphine. When autopsy was performed on these animals afterward none of them showed particles of coal dust or vomited matter in the trachea. This advantage is shown in the practical use of the method on human beings in the limitation of postoperative pneumonia. Elsberg in 1,000 cases of insufflation and Peck in 216 did not have a single case of post-operative pneumonia, while the latter au-

thor in the same number of cases of anæsthesia by other methods had five pneumonias. The introduction of a shorter tube through the glottis, for example Kuhn's, and the introduction of air through such a tube without strong pressure, does not, the author thinks, decrease the danger of aspiration, but even increases it in mild degrees of anæsthesia, and he has confirmed this view by experiments. He has, moreover, shown that in insufflation anæsthesia the irritation of the trachea is very slight. Insufflations of 14 to 24 hours' duration in animals did not cause any bronchitis or pneumonia or any traumatic injuries of the air passages.

Meltzer thinks his method possesses an advantage over the positive and negative pressure methods, because in the latter methods at least a part of the lung must be in contact with the thoracic wall in order to produce gaseous exchange, while in his method, even with complete separation of the lung from the thoracic wall, respiration continues. Furthermore, when heart collapse is produced in differential pressure methods or in insufflation, it is overcome much more quickly by resumption of insufflation than by differential pressure. Also, by insufflation, the gas exchange in the lungs is kept far above the necessary degree, almost up to the normal, while in differential pressure only a part of this gas exchange is accomplished, so that it goes down much nearer to the minimum. This is a great factor of safety, as the American engineers say in construction work, where, for the purpose of safety, they produce a strength much above the probable demands upon it.

Too abundant administration of ether during insufflation may have a toxic effect. Such an intoxication is shown, however, soon after the proper limits are exceeded by the respiration of the animal becoming slower and shallower, and finally disappearing entirely. In spite of these alarming symptoms the condition is not critical, and can be maintained for about two hours before becoming dangerous; so the anæsthetist is warned in plenty of time, and danger can be avoided by decreasing the amount

of ether.

In the second part of his work the author discusses the practical use of his method in human surgery. It has been used in about 4,000 cases, and these, he thinks, have shown that the method is justified. He does not give exact statistics from this material,

for he thinks that a better demonstration of its usefulness will be given by taking large series from individual surgeons, rather than, by collecting individual observations from a great number of surgeons, because in the latter case frequent failures by inexperienced surgeons may be included in the

So far as the author knows there have only been four or five deaths caused by insufflation anæthesia. He thinks these were due to gross errors and could easily have been avoided. One death was caused by fluid ether passing directly into the air passages, as the tube was accidentally lowered in the ether flask below the level of the fluid. In a second case the nurse noticed that the tracheal tube in her hand was slipping out, and on being advised to push it in again she pushed it in so far that the air which was introduced could not pass out again and ruptured the lung. This accident could have been avoided if the tube had been fastened in the proper position before being connected with the insufflation apparatus, and if the apparatus had had a safety valve. In a third fatal case the introduction of the tube, guided by the finger, was very difficult. Marked cyanosis developed and severe emphysema of the face and neck. In this case, too, the apparatus had no safety valve.

The last mentioned case is similar to one of Unger's in which it was also difficult to introduce the tube and emphysema followed. In another case where there was severe cyanosis and emphysema the patient was being operated upon for a tumor of the cerebellum. He was lying on his abdomen, and his head was drawn sharply over the edge of the table, making the outflow of the air very difficult. The anæsthetist noticed this in time, from the fact that the air did not bubble through the ether as well as before. Another death occurred from the tube being passed into the stomach instead of the trachea. Death followed before the distention of the abdomen

was noticed.

The author does not believe that the insufflation can be blamed for any of these deaths. They could all have been avoided if the method had been sufficiently understood beforehand, and if the apparatus had been provided with a safety valve, which is absolutely essential. As for post-operative pneumonia, most authors agree that it occurs more rarely after insufflation than after any other method of anæsthesia. Moreover, surgeons who have become practiced in the use of insufflation report that with it they have shock much less frequently, either during or after the anæsthesia. Insufflation should therefore be used in severe cases and in old and weak patients, because they recover quicker and better after its use. Vomiting is rarer also after insufflation, though there are no definite statistics to prove this.

Surgeons are also agreed as to the value of the method in operations on the neck, jaw, mouth, and pharynx, as the backward flowing current of air keeps the blood away from the air passages. For the same reason it is excellent in operations where the patient is liable to vomit, as in ileus, and also in operations in the region of the medulla oblongata. since respiration is more apt to stop in such operations, and insufflation is of aid in that respect. It is of great advantage in intrathoracic operations, and it also does good service in internal medicine in cases of transient respiratory paralysis and in cases of poisoning.

Two cases are reported, in one of which the patient had injected I gm. of morphine and then breathed gas, and the other had used opium two days in succession. In these two cases insufflation was kept up for 14 and 12 hours respectively, and

both patients completely recovered.

In regard to technique, the author believes the simplest and best method is to introduce the tube through a tube-shaped laryngoscope. The tube should be carried in until it meets resistance and then withdrawn 5 or 6 cm. This avoids the blunder of introducing it into the esophagus, for no such resistance is met with in the œsophagus. This resistance should be encountered about 33 cm. from the teeth, thus proving that the tube is in the trachea. It is better for the intratracheal tube to be too small than too large. If it is too large there is nothing to do but withdraw it; if it is too small the difficulty can be overcome by moderate pressure in the region of the hypothyroid membrane. The pressure of the air current should be regulated according to its effects on the movements of the thorax and abdomen.

### SURGERY OF THE HEADMAND NECK

### HEAD

Leriche, R.: Treatment of Permanent Fistulæ of the Parotid by Destroying the Innervation of the Salivary Gland (Behandlung der permanenten Parotisfisteln durch die Entnervung der Speicheldrüse. Zentralbl. f. Chir., 1914, xli, 754. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In order to avoid total extirpation of the gland in stubborn fistulæ of the parotid, the fistula can be obliterated by destroying the secretory nerve of the gland. This is contained in the auriculotemporal nerve, which divides into several branches back of the condyloid process.

The nerve is laid bare at "the point of election," dissected, with its branches, up to the gland, and slowly twisted out by Thiersch's method. Leriche has used this method with complete success in three cases. VORDERBRÜGGE.

Van Valkenburg, C. T.: Focal Localization of Sensation in the Cerebral Cortex of Man (Zur fokalen Lokalisation der Sensibilität in der Grosshirnrinde des Menschen). Ztschr. f. d. ges. Neurol. u. Psychiał., 1914, xxiv, 294. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

There is no longer any doubt that the central sulcus forms a boundary line between motor areas of the cortex that can be stimulated electrically and sensory areas that cannot. All attempts at localiza-tion of sensation should, therefore, be confined to parts of the cortex lying back of the central sulcus. The cortex lying behind the central sulcus receives sensory stimuli originating in the periphery. By faradic stimulation of this part of the cortex it is possible to produce sensory impressions in the peripheral part of the body of a patient who is fully conscious. The author proved this in two patients who belonged to that class of Jacksonian epilepsy in whom the beginning of the attack is announced by signs of sensory irritation in certain parts of the body. After trephining under local anæsthesia, he could, by faradic stimulation of the posterior part of the central convolution, before the removal of the diseased part of the cortex, produce the typical paræsthesias that accompanied the attacks.

There is a close relation between the motor and sensory foci; that is, the foci for motion of certain joints lie at a certain spot in the convolution in front of the central sulcus, while the foci for sensation of the same areas lie in the same horizontal plane in the convolution back of the sulcus. There is parallelism between the motor and sensory areas in the

two central convolutions.

The author regards the points of sensory stimulation found as the expression of circumscribed irradiations from centripetal fibers which serve to conduct sensory stimulation from circumscribed skin areas. The nearness of the motor and sensory points in the two convolutions has important physiological significance in the coördinating influence of sensation on movements. It has not been shown how the different qualities of feeling are distributed over the cortex, but kinæsthesia is a complex sensation; muscle sensation was never observed on stimulation.

The regional relation between the surface of the body and the surface of the cortex is shown by the post-operative findings in one of the author's cases, in which .75 ccm. of the cortex of the posterior central convolution was excised, this being the sensory area for the ulnar part of the hand. The skin region affected was limited to the fourth and fifth fingers, the surface being of the same breadth on the dorsum and palm of the hand. There was hyperæsthesia for touch, lack of discrimination between two stimuli used at the same time, disturbed muscle sense, astereognosis, delayed temperature sense, and ataxia, all increasing toward the ulnar side. However, the correct localization of stimuli was preserved, also pain-sense, pressure-sense, and temperature-sense. This shows dissociation of sensation in cortical foci. Except pain-sense, pressure-sense, and temperature-sense, all kinds of sensations have a primary localization in the cortex. These foci are the same for different sensory stimuli; that is, impulses originating in the same area on the surface of the body end in the same cortical area in the posterior central convolution. STREISSLER.

Friedrich, P. L.: Operative Indications in Gunshot Injuries of the Brain in War (Die operative Indikationsstellung bei den Hirnschüssen im Kriege). Beitr. z. klin. Chir., 1914, xci, 271. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

There is a large percentage of gunshot injuries of the brain among the cases of death and of wounds handled during war. The methods in civil surgery, which are not uniform by any means, are not always applicable in war. Friedrich recommends that in injuries in civil life the wound be cared for at once. but only in exceptional cases should there by any operative procedure on the brain; the entrance wound should be left partly open so that wound secretion, bits of necrotic brain, and foreign bodies may be discharged. An illustration is given of Thiersch's crown bandage which leaves the wound free. From statistics of previous wars no general rules can be laid down as to war surgery, as the varying conditions must be taken into consideration. In war it is not a question of trephining but of operation on an already open skull. There are various kinds of injuries to the brain, and simple nomenclature should be agreed upon for the purpose of general understanding. As to depth, rebounding and grazing shots are distinguished; also open shots, either penetrating the whole skull, or making a unilateral wound; another classification is into wounds of the base or other regions of the skull.

In war a skilled surgeon should immediately look after the wound, but the skull should be spared as much as possible. Not all fragments need be removed, but only those lying free in the wounded area or those pressing against the brain. The degree of operation on the skull is illustrated by experiences in the hospital at Saloniki, where it was observed that too active operative procedures often produced bad results, while the results of expectant treatment were good. In closed injuries to the brain expectant treatment is still more indicated-at least attention to the entrance and exit wounds. Injuries to the base do not belong to primary surgery. Indications in rebounding shots, in hæmorrhage inside the skull, and in the brain are dis-

cussed.

Even symptoms of brain pressure do not demand immediate operation if they are not progressive; sometimes even a technically correct early operation does not prevent late infection. The greatest reserve is also recommended when there are signs of cortical irritation in depressed fractures. Contractures are more of an indication for operation than convulsions. Disturbances of speech may appear even in injuries that are far away from the speech center. In all early operations general anæsthesia should be abandoned in favor of local anæsthesia in connection with morphine injections. When and where primary operations—that is, operations within the first 48 hours—shall be performed, depends on the means for transportation and care of the soldiers. Injuries of the skull and brain should be attended to as soon as possible either on the field or in its immediate neighborhood. Among the late cases signs of brain pressure without infection are unusual. Infection predominates in these cases, and are to be judged by their clinical signs. A rise in temperature without any other cause serves as a warning. Operative interference should be undertaken through one of the wound openings. Several case histories are given.

Streissler: Gunshot Injury of the Right Sinus Cavernosus (Schussverletzung des rechten Sinus cavernosus). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i Grenzgeb.

A case is reported in which Streissler successfully removed the bullet. The 25-year-old man was suffering from a neuroparalytic keratitis of the right eye from partial anæsthesia of the first branch of the trifacial, and also from abducens paralysis. This fact indicated the exact location of the projectile, and it was further confirmed by a stereoscopic röntgen picture. Because of the threatened loss of the eye, operation was attempted. The external carotid was ligated under Haertel's ganglion anæsthesia, and the gasserian ganglion found by Lexer's method through the temporal. The dura was split in the neighborhood of the foramen ovale and the bullet was found in the lateral wall of the sinus, I cm. back of the anterior clinoid process. It was There was an extracted without hæmorrhage. excellent view of the field of operation; even the infundibulum of the hypophysis could be seen. There was rapid recovery from the neuroparalytic keratitis. This case is interesting, as it is the first time a projectile has been reported as having been removed from this location.

MADELUNG and BRAUN report gunshot injuries of the hypophysis through the sinus cavernosus.

KRAUSE reports the successful extraction of a

bullet from the optic nerve.

Four operations have been performed on the sinus for thrombophlebitis by BIRCHER, HARTLEY, Voss, and KÜTTNER.

Thiery mentions a case of arteriovenous aneurism after gunshot injury of the sinus. For practical work the author recommends the intracranial temporal route for locating the sinus, but in septic processes, such as thrombophlebitis, he prefers the transsphenoid route on account of the danger of meningitis.

Selbstbericht.

Dowman, Jr., C. E.: Hæmostasis, with Special Reference to Its Employment in Surgery of the Brain. Surg., Gynec. & Obst., 1914, xix, 415. By Surg., Gynec. & Obst.

Recent experiments in the use of omentum and superficial fascia in the control of hæmorrhage from wounds in parenchymatous organs are reviewed.

In cranial operations the choice and administration of the anæsthetic is important on account of the influence on the control of hæmorrhage. Ether seems to be the anæsthetic of choice. A semi-sitting posture of the patient also has a definite controlling effect on the freedom of hæmorrhage.

Hæmorrhage from the scalp is best controlled by some form of tourniquet: that from the diploë with Horsley wax, wooden or ivory pegs, or small pieces

of cotton or muscle.

In cerebellar explorations where there is marked intracranial pressure, it is sometimes necessary to aspirate the ventricles before the large venous lakes covering the occipital muscles collapse and allow further operative procedure.

Cushing's silver-wire clips for the vessels of the meninges and brain are considered more desirable than sutures. Cotton pledgets wrung out of hot salt solution usually suffice for ordinary oozing. Hæmorrhage from the sinuses can usually be controlled by small muscle transplants.

Several layers of interrupted fine silk-sutures are recommended for closing wounds, as such sutures act as ligatures in addition to aiding the approximation.

The author offers the following conclusions:

1. Complete hæmostasis is one of the most important phases of surgical technique.

2. The type of operative surgery which sacrifices refinement in technique for the sake of speed should

be condemned.
3. The use of various tissues as hæmostatic

agents has a distinct field of usefulness.

4. Hæmorrhage during cranial operations is most troublesome and dangerous, and requires for its control the exercise of patience, ingenuity, and sound judgment on the part of the operator, in addition to the employment of the various hæmostatic agents and appliances known to surgery.

Heile: Surgical Treatment of Internal Hydrocephalus by Deviation of the Cerebrospinal Fluid into the Abdominal and Pleural Cavities
(Zur chirurgischen Behandlung des Hydrocephalus internus durch Ableitung der Cerebrospinalflüssigkeit nach der Bauchhöhle und nach dem Brustfellraum).

Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author presented the case of an 8-year-old boy who, until four months previous, could not walk because he suffered from severe extensor spasms of the lower extremities. An extreme spastic club-foot and abductor cramps with internal rotation of the leg had resulted from it with the knee in flexion. The boy's skull showed all the signs of severe hydrocephalus, and the spasms of the lower extremity were the result of the hydrocephalus. Bilateral puncture of the corpus callosum did not produce any improvement in the spasms. The child was normal mentally but was absolutely prevented from walking by the spasms. Repeated spinal punctures, by

which as much as 150 ccm. of fluid were withdrawn, showed that the hydrocephalus extended to the spinal canal, and after the discharge of the fluid there was temporary cessation of the spasms, but they quickly returned; therefore the author established on the left side a permanent drainage of the intradural space, at the level of the lumbar vertebræ, into the abdominal cavity by the heteroplastic implantation of a large saphenous vein. The perivascular fat was left on it to prevent the collapse of the vein. The vein with the fat attached took without reaction, but the discharge of the cerebrospinal fluid into the abdominal cavity soon stopped, because the vein had collapsed. The author sutured a 5 mm. rubber tube into the right side, beginning at the lower end of the spinal dura, and ending in the abdominal cavity in Petit's triangle, above the iliac fossa between the internal and external oblique. It healed without reaction, the discharge into the abdominal cavity was satisfactory, and the spasms improved to such an extent that the boy, who had not been able to walk since his birth, soon learned to walk without help.

The author recommends this drainage into the abdominal cavity in cases where there is free communication between the fluid in the brain and the spinal cord. In this way all the pressure-symptoms, not only in the cord, but in the brain, may be overcome. He points out that in the treatment of hydrocephalus it is important to study each individual case, and to determine in what part of the cere-

brospinal canal the stasis is greatest.

In diagnosis Strassburg's trans-illumination of the skull is of value, as it often shows that internal hydrocephalus is unilateral, even when there is no great asymmetry of the skull. The affected half should then be drained locally by puncture of the corpus callosum, or by Mikulicz' subcutaneous drain-

age, or by Payer's blood drainage.

In one case where the stasis was chiefly in the fourth ventricle from post-operative occlusion of the outlet at the base of the brain after an ear operation, the author succeeded in conducting the fluid into the pleura by inserting a rubber tube. To soften the sharpness of the end of the tube he drew over the lower part of the tube a living jugular vein removed from the patient. The fluid was not carried directly into the pleural cavity, but into the extrapleural space at the apex. In this case symptoms of intracranial pressure, such as choked disc, headache, and dizziness, disappeared completely after the insertion of the drain. The patient still carries the drainage tube and is free from all symptoms.

Klose treated another case successfully by drainage into the abdominal cavity, this time by the insertion of a silk drain.

KATZENSTEIN.

Rose, F. J.: Pathology of the Hypophysis (Zur Pathologie der Hypophyse). *Charkov. M. J.*, 1914, xvii, 249. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author's material consists of 7 cases of acromegaly, 5 of which were operated upon with

one death; 4 cases of dystrophia adiposo genitalis, with 3 autopsies and one clinical history; 4 cases of tumor of the hypophysis without acromegaly or adiposity. There were autopsy reports in all cases and there was also a case of diabetes insipidus with autopsy.

From his study of the cases Rose comes to the

following conclusions:

1. It may be considered proved that acromegaly is due to hyperfunction of the hypophysis. It is the result of eosinophile adenoma of the hypophysis.

Fischer holds that a tumor of the hypophysis with acromegaly should be operated upon, and the author agrees that that operation should be done

in progressive cases.

3. Dystrophia adiposo genitalis is the result of hypofunction of the glandular part of the hypophysis. There is a decreased or totally absent function from destruction of this part of the organ or retention of its secretion, which may be caused by pressure on the infundibulum or on the hypophysis.

4. Diabetes insipidus is without doubt due to changes of the intermediary and nervous parts of

the hypophysis.

5. In cases where tumors of the hypophysis do not show any of the above symptoms, but only brain symptoms, all parts of the hypophysis are preserved and their connection with the brain is not interrupted. The tumors in such cases are benign.

RIESENKAMPFF.

### NECK

Rogers, J.: Acquired Disease of the Thyroid Gland. Ann. Surg., Phila., 1914, lx, 281.

By Surg., Gynec. & Obst.

The author believes that all acquired diseases of the thyroid, except malignancy, are closely related in origin, each beginning in the same way, but sooner or later following a different route which terminates in one of the typical diseases of the gland or in one of the complications with which thyroid abnormalities are so often associated. He also believes it is possible to trace what seems to be the natural or regular progress of events when complications do not obscure it. With regard to so-called "simple goiter, he thinks that at one time or another, and occasionally for long periods, it may be accompanied by signs ordinarily accepted as those indicating either underactivity or overactivity of the epithelium, and that all rapid changes in the outline or consistence of the gland while developing are accompanied by at least some of the signs of hypothyroidism, or less often by those of hyperthyroidism. Moreover, any of these so-called simple or supposedly symptomless goiters, even after they have existed for years in a quiescent condition, may give rise to the severest forms of any of the functional thyroid diseases.

Considering the conditions of myxœdema and hypothyroidism, the author thinks these terms should not be used synonymously. The so-called typical or idiopathic myxœdema which begins after middle life with a primary atrophy of the thyroid is a rare disease, while the myxædematoid conditions which develop in long-standing goiters are very common and are symptomatically the same, except that the myxædema which occurs with goiter is generally much more easily relieved than the disease which is accompanied by no thyroid enlargement. Myxædema thus seems to begin in the majority of cases or in its regular form with the simple hypertrophy, which constitutes the first regular stage in all thyroid disease. The intermediate or next stage is that of hypothyroidism, which terminates in the typical and fully developed disease.

In citing a case of simple goiter followed by myxcedema, Rogers refers to the superior value of a combination of a one-gram thyroid tablet and a one-gram capsule of desiccated suprarenal over thyroid alone.

He thinks that exophthalmic goiter and hyperthyroidism are not synonymous terms, but that enlargement of the gland, with at least traces of deficiency in its functional activity, must be regarded as the regular disease. The third stage, which may entirely hide the second, is marked by the characteristic rapidity of the pulse and the nervous irritability, which are generally accepted as the chief evidences of hyperthyroidism, and he endeavors to show that exophthalmic goiter is a later stage than the hyperthyroid stage. Though regularly produced by hyperthyroidism, exophthalmos is not by any means a constant result of it. Exophthalmos appears after and not before the other symptoms, and when it does occur it marks the incidence of the fourth stage, or that of typical exophthalmic goiter. This stage of the disease is marked by a gradual and generally intermittent development of its distinguishing symptom. After its appearance the hope of recovery is distinctly less than before, and the probabilities of the development of complications are greatly increased. He refers to the occasional form which develops without any appreciable enlargement of the thyroid. The stage of goiter and hypothyroidism does not occur, and that of hyperthyroidism appears to develop rapidly or even suddenly, and may or may not be accompanied by more or less pronounced exophthalmos.

Recovery from hyperthyroid conditions may take place from any stage except the last stage, i.e., the myxœdematoid state following exophthalmic goiter, and the prognosis seems better in the presence of goiter than when this symptom is absent. The prognosis is much worse after the development of exophthalmos than before. More than 84 per cent of the deaths in hyperthyroid conditions in the author's experience occurred in cases which have presented this symptom. If recovery takes place, it is gradual and through a retracement of the steps which mark

the advance in the disease.

Discussing the physiology of the thyroid, the author says that it is an organ concerned chiefly in the production and expenditure of energy, or, more briefly, as an organ of nutrition. The only demonstrable nerve supply of the gland in man is a filament

which arises from the superior cervical ganglion of the sympathetic, and follows approximately the course of the superior thyroid vessels and enters the gland near them. More recent experiments have confirmed the interdependence chiefly of the thyroid, pancreas, and adrenal-sympathetic or chromaffin system, and clinical observation for the most part has added to these the pituitary and thymus. The thyroid and the adrenals seem capable of mutual stimulation or activation, and both give evidence of some inhibition upon the pancreas. The pancreas in turn seems to inhibit the activity of the other two glands. The thymus also seems to present some inhibitory effect upon the chromaffin system. The latest theory of disorders referable to these ductless glands suggests a primary neurosis of the sympathetic system, and he thinks that if each of the ductless glands activates or inhibits some particular group of nerve-fibers, at least a part of the relationship and interdependence of these organs becomes apparent.

As to the cause of abnormalities of the thyroid, he believes that fatigue plays a very important and

probably the causal rôle.

He states that surgical problems of hypothyroidism arise in practically every case of goiter, and in this

type of goiter he advises double ligation.

The treatment of hyperthyroidism by the removal of one lobe or one lobe and the isthmus of the diseased gland can undoubtedly yield perfect and lasting cures in between 50 and 75 per cent of all the cases so treated. The worst results seem to have occurred in subjects who were operated on before they had attained their maximum growth and development, that is, before the age of twenty-five, and in those who had small goiters. With the exception of the few successful, or partially successful, secondary thyroidectomies, the only treatment the author has found beneficial for these cases which have already had a partial thyroidectomy has been rest in combination with organ therapy. The most frequently useful organ, especially for those with high blood-pressure, has been the adrenal proteins which contain no adrenalin. The pituitary, the thymus, or the pancreas have seemed indispensable for the relief of others. The author's results with the serum have not been satisfactory for the mass of cases, showing only 15 or 20 per cent of perfect cures, and some 50 per cent of more or less marked improvement. With the serum treatment there was a considerable percentage of failures and relapses, and among these there was a mortality of about 8 per cent, but it is extremely beneficial in the early and uncomplicated cases of hyperthyroidism, and has proved almost a specific in the rare instance of early acute toxemic hyperthyroidism. As regards the operative treatment, he agrees that the interruption of the blood and nerve supply of the gland seemed safer than thyroidectomy.

Two hundred and eight cases, prior to August, 1913, were treated by the ligation and division of one or more of the thyroid vessels which must in-

clude the nerve supply of the gland. Among those operated upon there were four deaths: one from the ligation of one superior group of thyroid vessels; one from the simultaneous ligation of the two superior, and one inferior vessel. Both of these cases were operated upon under local novocaine-adrenalin anæsthesia. The other two deaths followed the ligation of the two superior groups of thyroid vessels under general anæsthesia. It was hoped that the quadruple ligation would not have to be supplemented by any other treatment, but later experience has proved that about half of the cases would improve up to a certain point and then remain stationary in a stage of ill health characterized chiefly by nervous irritability and asthenia, and a blood-pressure above 140 mm. of mercury. The tachycardia might or might not be noticeable. Further improvement seemed obtainable only by some organ feeding. The improvement after quadruple ligation of the thyroid blood supply, which must include the lower nerve supply and generally all or most of the upper, is not as rapid as after partial thyroidectomy, but the operation seems to be more certain in its results and less dangerous to life, and the patient has less subsequent risk of relapse even under the conditions and circumstances which seem to produce thyroid abnormalities. Thirty-six cases of typical exophthalmic goiter were subjected to quadruple ligation with no failures to effect improvement; of the 36, 25 now consider themselves well and are able to lead nor-D. C. BALFOUR. mally active lives.

Brooks, H.: The Clinical Manifestations of Physiological Hyperthyroidism. Long Island M. J., 1914, viii, 331. By Surg., Gynec. & Obst.

The author emphasizes the fact that physiological conditions may readily become pathological in degree. He believes that exophthalmic goiter is caused solely by hyperthyroidism, and cites minor manifestations which point in the direction of the disease without actually developing into it. He speaks of the lack of sexual development accompanying loss of thyroid secretion, and the rapid sexual development under the stimulation of hyperthyroidism. He compares the effect of castration in youth with the characteristics of cretinism. The effect of hyperthyroidism on the mentality of the cretin is most wonderful.

In overactive children, when restlessness, irritability, egotism, and selfishness develop, hyperthyroidism should be considered. W. H. Buhlig.

Jackson, H. C.: Symposium on Hyperthyroidism; Physiology of Thyroid. Long Island M. J., 1914, viii, 321. By Surg., Gynec. & Obst.

Jackson reviews the various theories regarding the function of the thyroid gland, and mentions the early assumption that the thyroid was an expansive and contractile organ regulating the amount of blood sent to the brain. A second theory was the antitoxic one. This hypothesis held that certain toxic substances were selected by the thyroid, which worked them over, and only by means of iodine saturated the substances so that they became non-toxic. The third theory was an outgrowth of the second and an addition to the autotoxic theory in that the substance active in the process was supposed to be a secretion thrown into the circulation to neutralize the toxic substances.

The view now current is known as the working hypothesis of chemical correlation. produced in the cells of a gland and thrown into the blood stream directly are called hor-The substances circulate through the various organs and tissues and bring about these specific effects. In this way one organ or tissue is correlated with others. In the case of the thyroid with a diminution of secretion, the effect on the adrenals, for instance, is a diminution of their secretion. Removal of the thyroid brings about a compensatory hypertrophy of the pituitary, indicating that the pituitary acted vicariously with the thyroid. The effect on the sexual organs of a reduction of thyroid secretion is to bring about a marked disturbance causing the organs to pervert, degenerate, or atrophy. The removal of the thyroid also causes the thymus to atrophy early. The pancreas is inhibited by the thyroid secretion, so that in hypothyroidism the pancreas acts excessively, making an increased power to oxidize carbohydrates.

In hyperthyroidism, the adrenal activity is increased. The results of a stimulation of the sympathetic or autonomic system is also noted by the increased heart rate, higher blood-pressure, and increased metabolic activity. Thyroid secretion brings about renewed activity of the sexual organs; the thymus is much stimulated, as shown by the formation of new cells in the thyroid; and the pancreas is inhibited, so that glycosuria may result.

Concerning the amount of iodine in the gland, it is known that some animals have no iodine whatever in the thyroid. It has also been shown that the amount of iodine in the thyroid may be increased or decreased by varying the iodine in the food. In dogs, spontaneous hypertrophy is due to a diminution of iodine in the gland, but iodine is not the only factor and it must be associated in some way with the colloid present; but irrespective of the amount of iodine, removal of the gland brings about the same symptoms. In exophthalmic goiter it has been shown that the amount of iodine varies inversely with the hyperplasia, and in fact that the low iodine content is the causative factor. Hyperplastic glands when left alone resort to the colloid condition and an increase in iodine follows.

In any gland the process of secretion is a double one; viz., the production of the substance and its elimination into the circulation. These two processes go hand in hand, resulting in an equilibrium in the cell. If there were no elimination, there would be a large iodine content in the gland, and if the elimination was very rapid there would be a low content of iodine, but the gland would be exerting a marked influence on the body. This suggests a

final thought that perhaps the thyroid effect in exophthalmic goiter is a secondary and not a primary one, since the thyroid can be accelerated or inhibited by the secretion of the glands in the same way as it acts on others. W. H. BUHLIG.

Mayo, C. H.: Hyperthyroidism: Primary and Late Results of Operation. Surg., Gynec. & Obst., By Surg., Gynec. & Obst. 1914, xix, 351.

Mayo reviews briefly the history of exophthalmic goiter, summarizing the pathologic and clinical studies which have been made on this disease in the Mayo Clinic, and giving in detail the operative pro-

cedures in use at present.

In discussing the pathology he notes that the gland presents a definite pathologic picture of primary hypertrophy and hyperplasia, the degree of which is parallel to the clinical stage of the development of the disease. This relationship is remarkably constant. A table accompanying the original article gives in parallel columns a comparison of the pathologic grouping of thyroids from cases of toxic hyperplastic, non-toxic hyperplastic, and atoxic, or simple, goiter.

Clinically, he notes that patients coming under observation for hyperplastic — ordinary exophthalmic - goiter give a history of having first noted the goiter at the average age of 32 years, the first evidence of intoxication being noted at the average age of 32.0 years, while the corresponding ages of patients with toxic non-hyperplastic goiter are respectively 22 and 36.5 years, thus showing that in patients with hyperplastic thyroids there are at

least two distinct clinical groups.

All patients during periods of exacerbation of the disease should be considered medical cases. Surgery is indicated in the up-wave of improvement. Cases resistant to medical treatment may be given injections of boiling water into the gland. In most of the severe cases a ligation is made first of one or both of the upper poles. Following single or double ligation patients gain an average of 22 pounds within the first four months, at the end of which time the larger part of the gland may be removed with safety. In thyroidectomy he speaks especially of the importance of an adequate preliminary exposure of the gland before any attempt is made at its removal, and of the importance, in so far as possible, of leaving undisturbed the capsule of the gland, thus protecting the recurrent laryngeal nerves and the parathyroids. He notes the present low mortality from operative procedure — as many as 278 consecutive operations on the thyroid having been made between deaths — and says that return of clinical symptoms occurs in but a small percentage of cases, usually through the removal of too much gland.

Fraser, A.: Exophthalmic Goiter; Its Pathology. Long Island M. J., 1914, viii, 236.

By Surg., Gynec. & Obst.

In exophthalmic goiter all agree that the most common and constant change is an active hyperplasia of the thyroid gland and the lymphatic tissues. Some observers claim that there are also changes which are specific, others that they are neither constant nor specific; a third view is that the glandular changes are for the most part constant. but not specific. In general, the changes in an exophthalmic goiter represent but one variable stage in the one fundamental cycle of exophthalmic reaction of which the changes in the forms of goiter, myxædema, etc., represent the other stages. The one characteristic reaction seems to be the only one of which the thyroid is capable, no matter what the cause may be which gives rise to it.

The whole cycle of reaction may be divided into three typical stages: (1) progressive, developmental; (2) regressive, involuting (recovery), colloid; (3) premature atrophic or exhaustion stage (myxœdema).

In the developmental stage the gland grows larger, softer, and more vascular. The epithelial cells increase in number and size; the alveoli become larger and new ones are formed; the capsule and stroma show hyperplasia; and the stainable colloid decreases. Very early the alveolar walls send papillary projections into the lumina. This invagination of the wall is claimed by some to be specific for exophthalmic goiter.

In the second stage, the gland is returning to the normal. It becomes firmer, less vascular, and of a normal color. The stainable colloid increases, the alveolar epithelium becomes cuboidal, and the papillary ingrowths disappear. This stage repre-

sents a recuperation, not a degeneration.

In the premature atrophic stage there is marked hyperplasia of the stroma at the expense of the al-The epithelial cells undergo progressive atrophy; and as the sclerosis proceeds, the alveoli become compressed and finally appear as scattered nests of cells embedded in a dense fibrous stroma. These three stages may alternate at short or long intervals and the transformation of one into another in dogs has been shown.

Regarding the presence of these changes in exophthalmic goiter there are two quite different theories. According to one, all of the above types as well as the normal gland are found in true exophthalmic goiter. The other theory is that active hyperplasia with infolding of the alveolar walls is found only in

true exophthalmic goiter.

The changes in the thymus, spleen, and lymphglands are identical with those found in the thyroid. Nervous system changes are not constant. The heart hypertrophies in the actively hyperplastic stage of the thyroid and becomes smaller in the stage of involution. Secondary changes in the valves, arteries, and myocardium are probably nutritional or toxic in origin. Atrophy and fatty degeneration have been observed, especially in the muscles of the eye. In the blood there seems to be a close parallelism between the percentage of monoclears and thyroid and lymphoid hyperplasia.

There are two views regarding the meaning of these anatomical findings. The first is hyperthyroidism, and the second is that the disease is a nutritional disturbance and the changes in the thyroid and other organs are symptomatic. The author is inclined to believe that the theory of hypersecretion is too simple and too narrow to explain the observed facts, and that in exophthalmic goiter the disturbance of the thyroid is insufficiency, its reaction compensatory, and its significance symptomatic.

W. H. BUHLIG.

Klose, H.: Progress in the Surgical Treatment of Basedow's Disease (Wandlungen und Fortschritte in der chirurgischen Behandlung der Basedowschen Krankheit). Berl. klin. Wchnschr., 1914, li, 10. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Rehn's discovery that the best results were obtained in Basedow's disease by reducing the size of the diseased thyroid as much as possible furnished the basis of the previous operative treatment. Thymus hypertrophy is the cause of death in 82 per cent of the fatal cases. Klose believes that the thymus is always involved in Basedow's disease, and that it is a disease of the whole branchial system.

One group of Basedow cases is thyroidal in origin, and there is only a quantitative involvement of the thymus, which disappears spontaneously after reduction of the thyroid.

In a second group the thyroid and thymus are involved equally and specifically. The thymus changes are similar in nature to those in the thyroid, and may briefly be designated as "epithelization." The injury is due to a chemical toxin, and is especially severe when this virus is disseminated through the neighboring tissues by the operation on the thyroid. Often there is an infiltration of the thyroid with thymus elements.

A third and more unusual group are the thymus cases. This form, in which the thyroid is only quantitatively involved, is generally found in young individuals, together with diffuse colloid goiter.

The essential point in treatment is to avoid thymus death by removing the toxic focus in the thymus; the combined operation is indicated. The diagnosis of thymus disease must be made before operation. It is indicated especially by symptoms of bulbar and articular myasthenia. Not much is to be gained by demonstrating increased sympathicotonic or vagotonic symptoms. Klose thinks the absolute increase in lymphocytes is important, as it indicates hyperfunction of the thymus.

In every severe case of Basedow's disease the thymus should be operated upon. In the severest cases there is only slight post-operative reaction. Partial local excision of the thymus is made under local anæsthesia, and should be intracapsular on account of the danger of hæmorrhage. Klose reports 200 cases operated upon at the Rehn clinic—no deaths resulting.

Hotz.

### SURGERY OF THE CHEST

### CHEST WALL AND BREAST

Caldwell, R.: Cancer of the Breast. South Pract., 1914, xxxvi, 387. By Surg., Gynec. & Obst.

In a review of the literature the author brings forth in an adequate way the necessity of early surgical intervention in tumors of the breast. The census of the United States shows that cancer in general is on the increase. The only known way to cure cancer is early radical excision. This early surgical intervention can only be brought about in two ways: (1) by educating the practitioner to have all cases of tumor of the breast thoroughly investigated, and (2) by educating the public to report to the doctor at once after discovering a breast tumor.

The author quotes statistics to show that the average time from the discovery of the lump by the patient to the time of operation is a little more than a year; while the average time from the time the physician's attention is called to it to the time of operation is found to be eight months. He quotes Mayo to the effect that if more inoperable cases of cancer of the breast were refused operation, it would materially influence the public opinion in regard to ill-advised delay in such matters. The further realization by the family practitioners of the importance of the immediate investigation of all breast tumors and the improved statistics when such tumors are

treated early, will lead them to place greater emphasis on their instructions to have the neoplasm immediately attended to. Bloodgood says that two out of every three tumors of the breast in women over 25 years of age are malignant. In cases where the tumors are malignant on microscopical examination, whereas they were apparently benign from the clinical symptoms, the percentage of cure is 100 in adenoma carcinoma of the breast; whereas, if the tumor is clinically malignant, the percentage is 85. The time to absolutely prevent cancer is to cure the trouble while it is in the pre-cancer stage. Hence by the removal of all tumors, benign neoplasms will be prevented from becoming malignant. Under the existing conditions, one out of five cases of cancer of the breast is saved; of those operated on two out of five are saved. HARRY G. SLOAN.

Oudard: Treatment of Fractures of the Clavicle by Couteaud's Position (Traitement des fractures de la clavicule par la position de Couteaud). Caducée, 1914, xiv, 119.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Previous methods of treatment have not attained ideal results. Oudard obtains excellent results with Couteaud's method in all recent fractures and in numerous older ones, especially if the fracture is in the classical location. The method is as follows:

I. The patient is first placed in the horizontal position so that the arm on the injured side hangs down perpendicularly from the bed without any support. The shoulder projects over the edge of the bed and rests on a cushion. The head and neck are bent toward the injured side so as to relieve tension on the muscles. The body can be fixed in counterextension. In this position within two hours an almost ideal reposition of the fragments takes place spontaneously. If there is great pain a few cubic centimeters of cocaine or stovaine can be injected at the site of fracture.

2. In the second position the forearm is bent at a right angle and laid on cushions, the necessary extension for maintaining the reposition being fur-This posinished by the overhanging upper arm.

tion is maintained for 10 to 12 days.

3. For patients who cannot endure the second position on account of its long duration, the physician can add a third position in which the arm is brought into the direction of the long axis of the body. Care must be taken, however, that there is no motion at the site of the fracture. In older fractures, if the callus is still soft, the angular position can at least be overcome, and the greater part of the shortening.

Complete recovery with normal motion is attained within 3 or 4 weeks. As a general rule, there should be no massage of the site of the fracture. The very slight callus disappears soon and the result is so good that a little later the site of the fracture cannot be distinguished. GRIINE

Sauerbruch: Surgical Treatment of Pulmonary Tuberculosis by Extrapleural Filling chirurgischen Behandlung der Lungentuberkulose mit extrapleuraler Plombierung). Beitr. z. klin. Chir., 1914, XC, 247.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Pneumolysis and extrapleural filling can, at present, be discussed only with reference to the possibilities of their development. Pneumolysis and filling should be considered in cases of tuberculosis with marked induration and extensive obliteration of the pleura. Filling, as heretofore used, cannot take the place of thoracoplasty. It affects only a limited area of the diseased lung, like a partial thoracoplasty; therefore exclusion and rest of the whole lung are not attained. Large fillings which would exclude the whole lung tend to produce exudate, may involve difficulties in the loosening of the pleura, and may become dangerous by displacing the mediastinum. Total filling can be used only when there is a fixed mediastinum. Partial filling may be very advantageous when, after extensive plastic operations, cavities with fixed walls do not collapse sufficiently.

The chief field of partial filling is in the local compression of cavities that have remained after plastic operations. Sauerbruch uses paraffin with a melting point of 50° C., or Bär's paste. The paraffin in a semi-solid condition is introduced cautiously through HELLER.

the mouth.

Regaud, C., and Crémieu, R.: Experimental Basis of Röntgen Treatment of Hypertrophy of the Thymus (Die experimentellen Grundlagen der röntgentherapeutischen Behandlung der Thymushypertrophie). Strahlentherap., 1914, iv, 708. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

According to previous workers, Heineke, Rudberg, Aubertin-Bordet, Pigache, and Béclère, the röntgen rays have an intense effect on the thymus, which manifests itself in a degeneration, especially of the lymphocytes, which may be followed by regeneration.

Regaud and Crémieu have tested these results in young cats, using modern radiological technique. After the application of a dose of 14 H. a reduction of the thymus was demonstrable on the second day; on the fifth day the reduction was 80 per cent and by the fourteenth day over 90 per cent. This reduction is due to a necrobiosis and absorption of the thymus lymph-nodes. The cells of the connective tissue are said to be transformed into Hassal's bodies. The regeneration begins about the fifteenth day in the lymphocytes that have remained intact and finally leads by karyokinesis to complete restitutio ad integrum. The thymus could be completely destroyed by one irradiation of 50 H. The general condition and the skin were not injured by the treatment. From their experiments these two authors recommend röntgen irradiation as the method of choice in the thymus hypertrophy of children, on the hypothesis that the histological structure of the hyperplastic thymus differs in no respect from that of the normal thymus. Eight cases were cured after 6 to 8 irradiations.

The treatment of a case of thymus hyperplasia with attacks of stenosis consisted of dosage tint III Bordier, with aluminum filter 3 to 4 mm. thick and 35 to 45 minutes' irradiation. After about twenty days this was repeated with tint I Bordier, and a focal distance of 30 cm. In chronic cases of stenosis, tint O Bordier is used every 8 days, 4 or 5 times. The regression of the thymus is always controlled radiologically.

#### TRACHEA AND LUNGS

Schumacher, E. D., and Jehn, W.: Experimental Study of the Cause of Death in Pulmonary Embolism (Experimentelle Untersuchungen über die Ursache des Todes durch Lungenembolie). Zischr. f. d. ges. exp. Med., 1914, iii, 340.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

From clinical observations at the Zürich clinic the author concludes that there are three causes of death in cases of pulmonary embolism. In the first class of cases death occurs almost at the moment of the embolism. This is not explained by the mechanical occlusion of the pulmonary vessel, but the death is due to shock; generally it is caused by relatively small emboli. In the cases where a large embolus suddenly cuts off the lumen of the pulmonary or one of its chief branches, the lesser circulation is interrupted in a short time, and death occurs after a few minutes, due to asphyxia.

In the third class of cases death occurs after a longer time. In these cases the patient dies with symptoms of progressive heart failure. Attempts were made to confirm these conclusions experimentally, clinically, and from pathological anatomy. experiments were made on dogs. In the first group the dogs survived the shock. Because of the extreme degree of stasis a large hæmatoma developed in the neck. The animals were short-winded. Autopsy a few days later showed marked displacement of the pulmonary and its branches. In spite of this a normal heart could overcome this resistance successfully for a considerable time.

The second group included the acute cases of death. The rapid fall of pressure in the arterial system, and its rapid rise in the venous, is typical of these rapidly fatal cases of embolism. On autopsy there is a contracted almost empty left ventricle, and a right heart filled to the maximum. Microscopically, no changes could be found in the heart. The overdistention of the right heart is responsible for death in certain cases, for sometimes when it is unburdened strong pulsations begin again.

In the third group all the late cases of death are collected. Hamorrhage in the heart is the characteristic firding. The chief cause of death is heart failure. Death from shock could not be demonstrated experimentally; the other two forms could. NAEGELI.

### HEART AND VASCULAR SYSTEM

Linzenmeier, G.: Closure of the Ductus Arteriosus Botalli after the Birth of the Child (Der Verschluss des Ductus arteriosus Botalli nach der Geburt des Kindes). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 217.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

After the different theories as to the closure of the ductus arteriosus are discussed, some experiments on children's cadavers are reported. Paraffin molds of the right carotid are used to represent the lumen

of the ductus arteriosus.

The author comes to the conclusion that none of the theories thus far advanced as to the closure of the duct is by itself sufficient to explain the sudden shutting off of the duct after birth. He thinks the chief factor in the closure of the duct immediately after birth is the kinking of the duct from torsion, as a result of the change in the position of the heart which follows the expansion of the lung after the first respiration. The conditions for this torsion and kinking are especially favorable because of the loose embedding of the duct in the surrounding connective tissue and the loose structure of the wall of the duct. The kinking is increased by traction from the pericardium, the fold of which is fixed at the point where the duct is twisted. It is further increased by the spiral muscle bundles of the duct, and there is also a narrowing of the lumen from the contracting muscle projecting inward in a roll-like fashion. A further important factor is the traction on the duct of the

branches of the pulmonary; when the lung expands they cause a marked curvature backward of the bifurcated end of the pulmonary artery and the point of insertion of the duct.

### PHARYNX AND ŒSOPHAGUS

Hacker, von: Restoration of the Esophagus, by an Antethoracic Tube of Skin and Large Intestine. (Ersatz der Speiseröhre durch antethorakale Haut-Dickdarmschlauchbildung. Deutsche Gesellsch. f.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Cases have previously been published of antethoracic plastic operation on the œsophagus with perfect functional results: by Herzen with the use of jejunum, by Lexer, Frangenheim, and Hevrovsky with skin and jejunum. The author adds a case in which skin and colon were used in a 12-year-old

In the author's case according to Vulliet's method, the spleen end of the transverse colon was drawn out of the abdominal cavity and fixed under the skin in front of the thoracic wall up to three fingerbreadths below the clavicle, the liver end being implanted into the anterior wall of the stomach. operation was performed June 19, 1913, and re-covery was uneventful. At the second operation, July 29, 1913, the esophagus, which was still contained within the thorax and which ended as a blind tube above the stricture, was brought out through a neck wound and also fixed subcutaneously in front of the thorax near the opening of the intestine. As a piece of it had to be removed the neck asophagus was finally opened axially just above the left sternoclavicular articulation, about 5 cm. from the intestinal œsophagus.

At the third operation, Oct. 25, 1913, the interval of 5 cm. was filled in with a tube of skin. It healed by first intention except for a small fistula that later healed spontaneously, so that after five months the entire plastic operation was finished. A blind pouch was formed at the point of opening into the stomach and it was feared that a peptic ulcer would develop; so, after resection of a piece of intestine 10 cm. long, it was implanted into the lesser curvature. eventful healing followed. Since the end of December, 1013, the child has been able to take all kinds of food through the mouth, so that the stomach fistula

was closed.

The author discusses various points in regard to the case. He calls attention to the excellent condition of the vessels and the good motility of the segment of colon and the possibility of quickly completing the whole plastic operation in from 5 to 6 months; and in the future this can be still further shortened, as the intestinal œsophagus can be implanted at first into the lesser curvature of the stomach. Points to be noted are that the food was retained for a considerable time in the new-formed œsophagus before being passed into the stomach, and that intestinal movements were preserved in the transplanted intestine for a long time—ten and one-half months—in contrast with the results in the previously reported The case must be observed longer, and further cases operated upon with comparison of the results and those of other methods before a decisive opinion can be formed as to the value of using the transverse colon in such plastic operations.

BLAUEL, of Ulm, presented two patients in whom he had performed a total plastic operation on the cesophagus by the use of a tube of small intestine and skin by Wullstein-Roux-Lexer's method. Both patients, boys of 11 and 17, have been taking all their food through the new œsophagus for three months. Blauel prefers his technique to Hacker's, which utilizes the large intestine, and also to those methods which utilize the wall of the stomach to

form a part of the new œsophagus.

HESSE, of Petersburg, has formed an artificial antethoracic œsophagus from the greater curvature of the stomach in 4 cases. One case died of pneumonia, in one case the stomach became gangrenous, and in one the new-formed esophagus was too short. In the fourth case it functioned very well for some months until the patient met with an accident. The operation is not difficult technically. Its advantage lies in the excellent nutrition of the greater curva-KATZENSTEIN.

Röpke: Operation for Œsophagospasm (Zur Operation des Œsophagospasmus). Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In most cases spasm of the cardia or œsophagus and dilatation of the œsophagus are of nervous origin. The diagnosis must be made by röntgen examination and œsophagoscopy. Röpke discusses the methods hitherto used; i.e., dilatation, gastrostomy with dilatation, and operations on the cardia or the œsophagus itself. Operation must be resorted to

when accompanying esophagitis, ulceration of the esophagus, bad condition of the patient, or marked lengthening and coiling of the esophagus above the contracted place, make dilatation too dangerous or too severe on account of the length of time required.

In a 34-year-old patient Röpke performed a very simple operation successfully. The patient had typhoid fever and for 13 years thereafter had experienced gradually increasing difficulty in swallowing, a feeling of pressure in the thorax after eating, and hindrance to the passage of food. At last only thin, fluid foods could be taken and even these were sometimes vomited. An emptying of the œsophagus on the day after the last meal brought up 750 ccm. of matter. The operation consisted of laying bare the peritoneum at the entrance of the œsophagus into the abdominal cavity. After being split, the lower segment of the esophagus, about 8 to 10 cm. long and not so thick as the little finger, was drawn down into the abdominal cavity. Above this the esophagus was flaccid and dilated in saccular form. The pericesophageal and pericardial tissues were loosened with forceps entirely around the esophagus and as far up as the dilatation. Food was given at first through a large esophageal sound. Since the operation the patient can eat anything; vomiting and other symptoms observed before the operation have entirely disappeared. He thinks the result was due to the rough handling of the œsophagus and the separation of the pericesophageal and pericardial tissues, by which nervous elements were certainly destroyed, and to the splitting of the musculature of the diaphragm which offered a hindrance to the narrow hiatus of the œsophagus.

Heller, of Leipzig, demonstrated a patient in whom he had split the musculature for œsophagospasm. But he was obliged to split it on both sides before attaining success. The operation was demonstrated by pictures. KATZENSTEIN.

### SURGERY OF THE ABDOMEN

### ABDOMINAL WALL AND PERITONEUM

Hanan, J. T.: Acute Myalgia of the Abdominal Muscles; Condition to be Differentiated from Surgical Lesions. Am. J. Surg., 1914, xxviii, 355. By Surg., Gynec. & Obst.

In reviewing the literature for the past eight years Hanan was able to find only three articles upon this subject, from which he concludes that the condition is undiagnosed or mistaken for some intra-abdominal

In myalgia of both abdominal muscles and other groups of muscles, the author has found a leukocytosis to be present ranging from 10,000 to 16,400, with an increase of the polynuclear cells to as much as 85 per cent. The pulse and temperature may also rise, varying with the degree of irritation.

The condition seems to be coincident with spring

and fall seasons and usually follows quickly after exposure to cold and wet. A sharp tap on the body of the muscle or its tendinous attachments excites pain at once, while gradual deep pressure only causes discomfort. An abdominal lesion gives more pain on deep pressure. Rectus pain may also be elicited by picking the belly of the muscle up between the thumb and fingers.

The author cites 6 cases of acute abdominal pain 3 showing considerable leukocytosis. Two cases followed exposure, one was associated with influenza, one was a case of autotoxæmia, and one case, from which a normal appendix was removed, showed malaria plasmodia in the blood. The abdominal pain in the last case disappeared upon administration of quinine. The author found salicylates efficacious in most of the cases.

EUGENE CARY.

Tirumurti, T. S.: Lymphangio-Endotheliomatous Growths of the Peritoneum. Ann. Surg., Phila., By Surg., Gynec. & Obst. 1914, lx, 356.

The author reports a case occurring in a male 60 years of age, who complained of fulness in the abdomen for six weeks. The swelling started in the left iliac region. The patient was gradually losing flesh and strength and was vomiting a greenishyellow liquid. On palpation an indistinct tumor was felt in the lower part of the abdominal cavity extending into both iliac regions, its upper being about two finger breadths above the umbilicus. It had a soft, crumbling, doughy feeling, was dull on percussion, and was separated from the liver dullness by an area of resonance. An exploratory laparotomy was performed and the intestines were found thickened and matted together. The small intestines were drawn back to the posterior abdominal wall owing to the thickening and contraction of the mesentery. As the disease was extensive, the abdominal wall was closed. The patient died the day after operation.

At post-mortem the peritoneum, both visceral and parietal, but especially the latter, was found covered with numerous firm, raised, yellowish-gray plaques and nodules. Over the cæcum and ascending and descending transverse colons there were numerous firm, yellowish nodules, like peas and beans. The peritoneal cavity contained about a pint of blue stained fluid. The mesentery glands were not enlarged. There was no omentum to be seen. A few small, yellowish, raised deposits, resembling tubercles, were seen on the surface of the spleen; otherwise the intestinal organs were normal.

Microscopic examination of the nodules showed a general condition of fibrosis. In places the fibrous tissue was hyaline. The fibrous tissue was invaded by fibrosis, and small loculi containing cells, oval in shape and having a large proportion of protoplasm, were seen. Some cells contained four nuclei. In places the section had the appearance of a scirrhous carcinoma. No giant-cells, caseating areas, or giantcell systems were found. The nodules in the capsule of the spleen consisted of hyalin fibrous tissue, which was arranged in a whirl, the center being necrotic.

The author thinks the condition was probably one of a diffuse lymphangio-endotheliomatous proliferation of the peritoneum, causing a chronic proliferative and productive inflammation of the peritoneum.

EDWARD L. CORNELL.

Curtis, H.: The Most Efficient Method of Drainage in Septic Peritonitis, and Its Prevention in Immediate Suture of Perforated Gastric and Duodenal Ulcers, etc. Clin. J., 1914, xliii, 551 By Surg., Gynec. & Obst.

The author defines two principles of efficient drainage for the prevention and treatment of septic peritonitis:

I. Arranging for the escape of the irritating fluid at the lowest point to which it tends to descend.

2. Routine bilateral subphrenic drainage. Under the first heading a rubber tube is inserted

in the cul-de-sac of Douglas in married women and in the rectum in men and unmarried women. The author has made a slight modification in Bidwell's method of introducing the rectal tube. He has devised an instrument called a drainage tube introducer. This introducer has the shape of a wellknown form of periosteal elevator, with a blunt point at one end, which is slightly curved for perforation of the bowel or cul-de-sac. The other end is bulbous, with a depression between the bulb and the stem. A good-sized drainage tube, corresponding in diameter to the cylindrical shank of the instrument, is fitted over the bulbous end, which has a thread on it to prevent the tube slipping off. The free edge of the tubing lies in the depression just beyond the bulb, so that no obstruction or resistance is perceived in introducing the instrument through any structure.

The author's technique is as follows: One hand of the operator being double-gloved, the blunt point of the curved end of the instrument, with its concavity directed forward, is carefully introduced through the laparotomy wound behind the bladder, and, in the case of the rectal as compared with the vaginal drainage, the blunt point is made to project through the anterior rectal wall at a point just above the prostate in men until it can be felt with the tip of the index-finger of the other hand. With a sharp movement the blunt point of the instrument is forced through the anterior rectal wall on to the counter-pressing finger. The instrument is drawn through with its attached tube. The inner end of the tube is brought to lie just below the sacral promontory; the outer end is stitched to the perineum,

following Bidwell's scheme.

The difficulty in Bidwell's method of subphrenic drainage lies in keeping the inner end of even a stout rubber tube in the space desired, and its invariable tendency to kink where it passes through the abdominal wall. To obviate this the author uses a solid pewter bougie of narrow bore. In addition to the pewter rod a gauze wick may also be inserted at the time of operation. These tubes are inserted through the loin and placed between the liver and the diaphragm and between the spleen and the diaphragm.

After all the drains have been placed, the abdominal cavity is thoroughly flushed out with normal salt solution, using plenty of it. The coils of the intestines are gently but thoroughly overhauled to facilitate the escape of accumulations of irritant material. Should adhesions be evident between the coils, they are gently separated.

EDWARD L. CORNELL.

Speed, K.: Observations of Inguinal Lipomata Based on One Hundred Fifty-Four Herniotomies. Surg., Gynec. & Obst., 1914, xix, 373. By Surg., Gynec. & Obst.

Attention is called to the masses of fat so frequently found in connection with the spermatic cord when the inguinal canal is opened in herniotomy, and to their mechanism in the cause of hernia primarily and in recurrence after operation. These masses of fat bulge forward and increase the cord bulk materially. They are divided into two types: (1) those occurring in direct hernia, which are usually flat, heavy masses of fat covering the weak area in the abdominal wall, but which may extend down the canal and out of the external ring; and (2) those of indirect hernia which assume shapes of (a) long pedunculated masses slightly lobulated, covered with a more or less true peritoneal-like covering which looks like a very thin sac, taking their blood supply from above, (b) broad bulging masses originating behind the cord at the internal ring, and (c) distinct fatty masses incorporated in the tissues of the cord with an attenuated neck at the internal ring.

Frequently the lipomata conceal a small sac at the upper end and they should be stripped out and well freed at the internal ring before removal. It is thought best to cut them off after ligating either separately or with the sac. In this series of cases lipomata were present in over 47 per cent of all cases

of all ages and weight.

### Hawes, J. B.: Mesenteric Gland Tuberculosis. Interst. M. J., 1914, xxi, 1046.

By Surg., Gynec. & Obst.

Hawes states that at the Massachusetts General Hospital during a period of fourteen years, out of thirty-two patients entered on the records as having mesenteric gland tuberculosis, only three were diagnosed as such prior to operation.

The cardinal features that lead to this diagnosis

are

1. The disease is one of childhood or early youth.

2. Signs and symptoms of a systemic infection, such as loss of weight and strength, fever, rapid pulse, and loss of appetite.

3. A tuberculous process elsewhere, in the lungs,

glands, or bones.

4. Abdominal symptoms, usually subacute or chronic, differing from appendicitis as to the site of pain, tenderness, etc.

5. A tumor is commonly located to the right of the umbilicus; it is only slightly tender and often

more or less painful.

Talbot is quoted as saying that fat is present in the stools, but Hawes thinks its absence should not outweigh the above evidence.

The treatment should be hygienic, with the use of tuberculin.

D. L. Despard.

### GASTRO-INTESTINAL TRACT

### Palefski, I. O.: The Examination of the Gastroduodenal Tract. Interst. M. J., 1914, xxi, 977. By Surg., Gynec. & Obst.

Palefski's aim is to point out the shortcomings of the older methods of gastroduodenal examinations, and to emphasize the importance of skill and precaution in the use of these new instruments, which not only facilitate examination but add a great deal to our knowledge of gastro-enterology.

A detailed history and thorough examination will oftentimes eliminate the gastro-intestinal tract, but all the methods of examination should be resorted to. The fluoroscopic screen is relied upon to reveal changes in peristaltic activity, and the röntgen ray and plate will demonstrate the mechanical derangements. He lays great stress upon the chemical analysis. Until a few years ago the secretory powers of the stomach could be easily ascertained by examination after the Ewald testmeal. The method recommended by Pavlov, in which the right hypochondriac region is massaged. after the ingestion of oil, is not always reliable; the examination of the stools for enzymes in pancreatic derangements also fell into disrepute. Then came the inventors of the duodenal tube, Gross and Einhorn, and, later, Hess with the duodenal catheter, and with these ingenious instruments fresh specimens could be readily obtained and examined.

The author has modified the stomach tube and has tried to correct all the faults of the old Kussman tube. He claims that the disadvantages of the old tube are that because of its thickness and firmness it is thrown into a curve when introduced into the stomach, and therefore does not reach the most dependent portion of this organ, and that because of the fact that the eye of the tube is above the level of the stomach contents thorough evacuation can be accomplished; also, that its passage is a forcible one and produces gagging, vomiting, and trauma. These facts, he claims, have been ably proven by Wagner and Dodd, in which they observed with the fluoroscope the passage of the stomach tube. His modified tube he claims to have tried in many hundreds of cases in the past three years. Its tubing is soft and collapsible, its passage through the oral-œsophageal tract is not forcible but depends upon the weighted tip, and this therefore minimizes trauma and discomfort to the patient. He describes two tubes to take the place of the old Kussman tube; one consists of a collapsible pure gum red No. 25 French tubing 55 cm. long and 6 x 8 mm. in diameter, to the end of which is attached, with No. 1 silk thread, a gold-plated lead tip weighing 140 gr., three-fourths inch long and the same diameter as the tube. Thus it is seen that the lumen of the tip, neck, and tube are all of the same diameter, which makes possible the easy passage of the gastric contents. He claims that some patients do not swallow the tip easily, and for these cases he uses a stylet of double length No. 8 French catheter; this gives the tube more body and can be easily withdrawn when it passes beyond the pharynx. Because this technique requires some skill he has modified this slightly, in that he uses a No. 20 French tube 4 to 6 mm. in diameter, to one end of which is attached an aluminum piece which has two eyes. From a perforated neck of the aluminum piece is suspended (by means of a silk thread a one-inch tubing, the thread running through the tubing) a 130 gr. gold-plated lead ball, about three-eighths inch long and No. 25 French.

He claims that this modification enables the patient

to swallow the tube easily.

The procedure of introducing the tube is described in three stages, as follows: (1) With the patient in a recumbent position, head on pillow, mouth open, the metallic tip is placed on the dorsum of the tongue and the patient instructed to swallow. When this is accomplished, the patient is requested to assume an erect position. (2) The patient is instructed to breathe deeply and is cautioned to swallow and not to chew the tube. The other end of the tube being supported, it is allowed to move slowly down to the 40 cm. mark; this is accomplished by the action of gravity. The length of time in which this is accomplished is an important factor and greatly minimizes the discomfort of the patient. (3) When the 30 cm. mark approaches the lip, the patient is requested to lie on the right side with the right cheek on the pillow and the mouth open. In this position the pylorus is in the most dependent position and gravity will guard the tube to this end. This will be accomplished when from 10 to 15 cm. more of the tube pass beyond the lips. The fact that the eyes of the tube being in the most dependent position insures a complete evacuation of stomach

The advantages of this tube are summed up, and the author states that its only contra-indications are when rapid work is required or when the cooperation of the patient cannot be secured. By using this modified stomach-tube there is no regurgitation, and as the extraction of the gastric contents depends upon aspiration, he advocates the use of his high and low vacumn glass bulb. This tube prevents soiling the bed clothes, lessens the preparation, and renders assistance unnecessary in extracting a test-meal, or in gastric

lavage.

For performing gastric lavage Palefski has devised an ingenious tube in connection with a double stopcock piece. Two glass graduated irrigation jars containing different solutions are connected to the tube and the stomach-tube is also connected to the double cock-piece. The fluids are then allowed to flow into the stomach-tube, and, because of the absence of distress to the patient, are allowed to remain in the stomach a long time; then the flow is cut off by turning the stopcock and the stomach contents are allowed to flow into another jar by simply opening the lower stopcock. He claims that duodenal intubation should be performed only by skilled hands, and thinks that each institution should have some one assigned to this special work. Not all patients are suitable for this examination, the cooperation of the patient being an essential factor; old, young, restless, and unintelligent patients make poor subjects.

There have been many tubes devised for this procedure. The requisites for a good tube should be that, after its introduction, the ball of the tube, by means of gravity, should reach the pylorus, and it must be capable of passing through the horse-

shoe-shaped duodenum in a short space of time. The author describes the merits of the Gross and Einhorn tubes as well as his own. After several hundred examinations trying balls of different shapes, sizes, and weights, he has found that his tube is the best for service and speed. It consists of a No. 8 French pure rubber tube, to one end of which is attached a perforated gold-plated ball weighing 100 gr. The tube is marked off at 40, 50, 60, and 70 cm. from ball. The procedure of passage is practically the same as previously described; it is best passed on an empty stomach, and for this reason he usually performs this procedure at 9 A. M. The important points to bear in mind are: the tube should not be introduced farther than 35 cm. before the patient places himself on the right side for fear of its becoming kinked and doubled. The gastric contents should be aspirated immediately after introducing the tube to ascertain whether the tube has reached the pylorus. He does not agree with Rehfuss that the ball should be slotted instead of perforated.

In order to examine gastric and duodenal contents simultaneously, the author has devised a noncommunicative double-channel tube, one channel leading to the duodenum and one to the stomach. The gastric end of each tube is attached to and communicates with a double-bored aluminum piece weighing 5 gr., so when the duodenal piece finds its way into the duodenum, in from 1 to 2 hours the aluminum piece is brought to the pylorus, and thus by way of the double-channel tube, both contents are apsirated simultaneously. In order to ascertain whether the tube is in the duodenum, the author provides for the examination of the aspirated fluid, inflation, and osculation. The advantages of the examination of the duodenum are: the functional activity of pancreas is ascertained, the lesions in the gastro-duodenal tract are localized, the progress of the tube from the pylorus to the jejunum and its contents, the alimentation of the duodenum, local treatment, and the suction of the common bile duct when not obstructed by

COLLES

The author has devised a method of visualization of the course and shape of the duodenum in connection with the röntgen rays. This is accomplished by injecting through the duodenal tube 10 ccm. of strained bismuth in milk. The patient is then told to drink one glass of milk containing I oz. of bismuth in suspension, to differentiate the stomach, and then an exposure is made, with the abdomen to the film side of the plate and the patient in an erect position. He then shows a number of positives showing the normal curves of the stomach and the duodenum and others showing the course of the duodenum in ulcers, demonstrating the sharp angles which would be seen if there were adhesions. He closes with a promise to relate further experiences on this most interesting subject of visualization of the duodenum in various lesions.

L. B. CRAWFORD.

### Goldsmith, A. A.: Modern Gastroscopy; with Demonstration of the Sussmann Gastroscope.

Illinois M. J., 1914, xxvi, 169.

By Surg., Gynec. & Obst.

The author touches briefly on the development of gastroscopy and gives a description of the Sussman

gastroscope.

Kussmal, in 1868, was the first to examine the stomach endoscopically. He used the direct-vision instrument. Up to the present date the method has swung from direct to indirect-vision instruments, and back again.

A description is given of the Sussmann gastroscope, which is of the indirect-vision type. Its chief

advantage is its flexibility on introduction.

In regard to its introduction in difficult cases, the author recommends first passing the flexible part in a sitting posture and then making the inspection with the patient in the right lateral decubitus. Sussmann, however, is quoted as recommending the right lateral position throughout, but with the head well dropped down.

The author feels there is no great danger attending this procedure and states that the only discomfort felt is a slight rawness in the lower pharynx-for

a day or two following its use.

PHILLIPS M. CHASE.

### Pirie, A. H.: Indications Afforded by X-Rays, for and Against Operations on the Stomach, and the Results Obtained from Such Operations. Am. J. Röntgenol., 1914, i, 337.

By Surg., Gynec. & Obst.

Surgery of the stomach has passed through three stages and is now entering on a fourth. The first stage was that in which the abdomen was not opened and the patient died. In the second stage the abdomen was opened to find out what was wrong, and frequently it was found that nothing could be done to cure the trouble. In the third stage often an exact diagnosis may be had by the use of the X-rays, and the fourth stage, for which we are striving, will be reached when the surgeon can determine by the X-rays and other aids what the lesion is, so that by "rule of thumb" he will know at once whether or not to operate.

Pirie has seen the following operative conditions diagnosed by the X-rays: Chronic gastric ulcer, hour-glass stomach, carcinoma, pyloric stenosis (caused by duodenal ulcer or carcinoma), gastroptosis, acute gastric ulcer, tumors pressing on and distorting the stomach, stenosis of the cardiac opening, adhesions, foreign bodies in the stomach, and normal stomachs. He cites a number of cases

illustrative of these conditions.

Regarding pyloric obstruction he states that when barium remains more than six hours in the stomach it is usually due to such obstruction, provided the patient does not eat or drink for six hours after the barium meal. As an exception he mentions the case of an eight-hour residue in a girl whose stomach was found normal at operation. The residue was at-

tributed to the fact that the girl was neurasthenic and the excitement attending the examination probably delayed the normal action of the stomach.

Gastroptosis is frequently shown by the X-rays. It is usually accompanied by poor health and a neurasthenic condition. In one such case which the author saw operated upon, the stomach was raised two inches, but the patient remained a neurasthenic after operation.

Pirie thinks the stomach should be empty all night and three times each day and that it requires these periods of rest. Thus the X-rays may aid in recommending dietetic and medical treatment in cases, for example, where they show a patient's stomach half full four hours after a meal.

ALBERT MILLER.

### Tuohy, E. L.: Luetic Contractures of the Stomach. Interst. M. J., 1914, xxi, 1036.

By Surg., Gynec. & Obst.

Tuohy reports two cases of hour-glass stomach, with positive Wassermann reactions and improvement under antispecific treatment.

He reviews the literature and regards the evidence as inconclusive in attributing the immediate cause

to syphilis.

With a positive serum test and the visualized evidence of the röntgenogram, the patient should be given the benefit of the doubt and receive anti-

specific treatment.

He agrees that on practical ground it must be admitted that syphilis does involve the stomach, that the gummatous and ulcerating tissue can cause scarring and shrinking, and that hour-glass stomach might theoretically occur; but he points out that antispecific treatment will only change tissues in their plastic cellular state or stage of necrosis and destruction.

If it could be positively stated that antispecific treatment thoroughly overcame the cicatrization, this would seem to be the most positive proof of their specific nature.

Prolonged and more intensive study may prove the specific nature of these lesions or a certain percentage of them.

D. L. DESPARD.

### Verbrycke, Jr., J. R.: Chronic Perforation of Peptic Ulcer. Surg., Gynec. & Obst., 1914, xix, 370. By Surg., Gynec. & Obst.

Verbrycke reports 4 cases of chronic perforation, 2 being of the occult type, sealed up by perigastric adhesions, and 2 being large perforations. Of the latter, one had perforated two months before into the gastrohepatic omentum and the other had perforated three weeks before with the formation of an abscess cavity between the duodenum, pylorus, gall-bladder, and liver.

Three were operated upon, while the fourth, a pin-hole perforation, received medical treatment.

All four patients recovered.

Diagnosis was correctly made in 3 cases, while in the fourth the perforation was discovered at operation for ulcer with hour-glass contraction and obstruction. The radiograph was of considerable assistance in the diagnosis.

Verbrycke concludes that this result of ulcer must be more common than has been supposed.

Archibald, E.: Method of Treating Adherent Perforating Ulcer of the Posterior Wall and Lesser Curvature of the Stomach. Ann. Surg., Phila., 1914, lx, 336. By Surg., Gynec. & Obst.

The author reports a case of perforated gastric ulcer occurring in a woman 44 years of age. At operation a large indurated mass was found on the posterior wall of the stomach. Its upper limit involved the lesser curvature. It was situated 7 cm. from the diaphragm on the lesser curvature and 9 cm. from the pylorus. As it was densely adherent to the pancreas, it was impossible to do a posterior gastro-enterostomy. Resection of the ulcer was not justifiable, owing to the poor resistance of the patient, hence it was deemed advisable to exclude the ulcer by means of a fascial ligature.

A fascial strip taken from the anterior sheath of the rectus was passed by means of a long-curved forceps through a slit in the great omentum close to the greater curvature behind the stomach and out through an opening in the lesser omentum close to the lesser curvature, about 1 cm. above the upper limit of the inflammatory mass. On tightening the ligature, the stomach was found to be tied off about its middle, forming an artificial hour-glass stomach. An anterior gastro-enterostomy was performed in the cardiac half of the stomach at a point on the jejunum about twelve inches from the duodenojejunal juncture. The stoma was about two inches above the greater curvature and about a third of the way from the greater to the lesser curvature. The abdomen was closed without drainage.

The patient improved for about three weeks, when she again complained of abdominal discomfort. Three weeks later blood was discovered in the vomitus and the stools were tarry. A week later the abdomen was opened again and extensive adhesions found between the stomach and jejunal loop, together with the gastrocolic and gastrohepatic omenta to the anterior abdominal wall. After these were separated, the anastomosis was found to be patent and the band of fascia was apparently holding, but it was impossible to tell whether or not the ulcer had burrowed its way into the proximal part of the stomach. A second gastro-enterostomy, done near the greater curvature, failed to relieve pain or vomiting and the patient's condition steadily became worse and she died two weeks later. At the postmortem examination there was no evidence of peritonitis nor was there any fluid in the abdomen. The ulcer was of large size, almost round, had very thickened walls, and over its floor coursed a large vessel in which was found an opening large enough to admit a small probe. The fascia ligature had yielded to the extent of admitting the tips of the three fingers in the opening joining the cardiac with

the pyloric portions. The ulcer measured 5 cm. in both diameters and its bed was formed by the surface of the pancreas.

Although the method, in the instance cited, failed to save the patient, the author thinks that the method itself was not to blame. The presence of the bleeding ulcer and the giving way of the fascial ligature combined to defeat the ultimate effect, but the immediate result of the operation and the improvement for the first three weeks were decidedly encouraging. It seems justifiable to propose the operation for all such ulcers of the posterior wall and lesser curvature which are mechanically difficult to excise and in cases in which excision seems at all risky. Particularly is this the case when the ulcer is a perforating one, when there is much in-flammatory tissue around it, when the patient is much reduced from hæmorrhages and chronic starvation, and when the ulcer is situated somewhat inaccessibly under the left floating rib.

EDWARD L. CORNELL.

Friedman, J. C., and Hamburger, W. W.: The Rôle of the Pylorus in the Etiology and Treatment of Gastric Ulcer. *Illinois M. J.*, 1914, xxvi, 166.

By Surg., Gynec. & Obst.

The authors discuss the part played by the pylorus in chronic gastric ulcer cases, and give some suggestions for treatment.

Acute ulcers are usually multiple, and are found in any part of the stomach. They heal easily, and are probably due to infective processes in other parts of the body, as cholecystitis and appendicitis.

Chronic ulcers occur singly most frequently, are situated in the pyloric region, and do not heal readily. Their chief cause, so the authors believe, is pylorospasm, induced by irritation of the ulcer base. This gives rise to retention of stomach contents, hyperacidity, and increased peristalsis, which is most marked in the pyloric region. An acute ulcer in this region becomes either a callous chronic one due to continued irritation, or a spreading ulcer due to hyperacidity and self-digestion.

The late pains of Moynihan, considered diagnostic of duodenal ulcer, and called by the French "the pyloric syndrome," are caused, according to Hertz, by the increased peristalsis and pylorospasm, and a consequent rise of intragastric pressure; following which, any ulcer of the stomach, if sufficiently irritated, may cause these pains.

A second class of pains are the early-pains, due to adhesions of the pyloric region.

An outline of treatment is given, consisting of the various alkalies, milk and cream diet, atropine in small doses, and rest in bed. Silver nitrate in half-grain doses and the gastro-intestinal diet of Adolph Schmidt, consisting of very finely divided meat and vegetables is recommended during the latter part of the illness. Systematic stomach lavage is advised in cases where there is considerable stasis.

Surgery is advised in cases showing no improvement after considerable medical treatment. The authors do not consider simple gastro-enterostomy as sufficient, but advise excision of the ulcer or some form of pyloric exclusion.

The article concludes with two discussions bear-

ing out the above statements.

PHILLIPS M. CHASE.

Carman, R. D.: Some Essential Points in the Radiologic Diagnosis of Gastric Cancer and Gastric Ulcer. St. Paul M. J., 1914, xvi, 383. By Surg., Gynec. & Obst.

Carman thinks that the tremendous value of the X-ray in the diagnosis of lesions of the digestive tract is not generally appreciated and notes that, in the röntgen laboratory of the Mayo clinic, cancer has been diagnosticated in over 90 per cent of the cases, gastric ulcer in over 80 per cent, and duodenal ulcer in from 50 to 60 per cent. His technique may be defined as the combined fluoroscopic and röntgenographic examination with the double opaque meal. There is no single, standard, normal, radiologic stomach. The average normal stomach will hold 24 fluid ounces of ingesta without discomfort; its contour is unbroken save by peristaltic waves and certain constant incisuræ; its walls are flexible; its peristalsis is neither excessive nor absent; it is more or less mobile between its points of suspension; and it will clear itself of its contents within six hours.

He lists the radiologic signs of gastric carcinoma in order of importance as follows:

1. Filling defects.

2. Altered pyloric function: (a) gaping of the pylorus; and (b) obstruction of the pylorus.

3. Advanced position of the six-hour meal.

4. Absence of peristalsis from involved areas of the stomach.

5. Diminished mobility and flexibility.

6. Diminished size of the stomach.

7. Antiperistalsis.

The positive röntgenologic diagnosis of gastric ulcer can only be based upon the presence of one of two signs: viz., the niche or the accessory pocket. Other signs which are corroborative but not diagnostic of themselves are: (1) the incisura, (2) hourglass stomach, (3) residue in the stomach after six hours, (4) lessened mobility, (5) localized pressure-tender point, (6) delayed opening of the pylorus, (7) acute fish-hook form of the stomach with displacement to the left and down, (8) gastric hypotonus, and (9) antiperistalsis.

George, A. W., and Gerber, I.: The Röntgen Diagnosis of Duodenal Ulcer. Surg., Gynec. & Obst., 1914, xix, 395. By Surg., Gynec. & Obst.

The author gives a comparison of the two methods of röntgen study of duodenal ulcer that have gradually developed; viz., the direct and indirect methods of diagnosis. The direct method generally used by European observers is based upon a consideration of the groups of signs, usually of a functional nature, which have been found associated with organic lesions. As an example of this indirect

study, the authors review critically a recent paper by Carman, who has used this method of diagnosis very largely. They come to the conclusion that his findings do not warrant dependence upon this method as a very positive one in the röntgen diagnosis of duodenal ulcer.

The direct method, of which the writers are exponents, disregards the above evidence entirely, and merely determines the normal or the pathological condition of the duodenum. This can be done only with careful attention to technique. From this strict point of view fluoroscopy is very unsatisfactory. Repeated plates are much more valuable, especially the serial method as first suggested by Cole. They must be taken in the prone, standing, and especially the lateral, position; and from these plates the anatomical condition of the duodenum is determined.

The writers claim that a normal duodenum can always be shown if proper technique and proper bismuth mixtures are used. The demonstration of a normal duodenum, even on a single plate, rules out the presence of indurated or surgical ulcer.

Duodenal ulcers show a characteristic deformity due to connective tissue, with sometimes a stream of bismuth entering the actual mucosal defect.

Of 82 cases operated upon for duodenal ulcer, an exact diagnosis of the size and site of the ulcer was made in 78 cases. In 3 cases duodenal ulcer was reported, but there were minor errors of diagnosis. In one case there was a complete failure of diagnosis.

Of approximately 150 operated cases in which a negative röntgen diagnosis was made, in no case was a duodenal ulcer found. A duodenal ulcer was found in one autopsied case on which the previous

report had been negative.

The authors feel that the results of the direct method are far superior to those of the indirect method, even when the latter is used by the most expert operators. They believe that the actual demonstration of the lesion itself is the only important factor in the röntgen diagnosis of indurated duodenal ulcer.

Wilkie, D. P. D.: Observations on the Pathology and Etiology of Duodenal Ulcer. Edinb. M. J., 1914, xiii, 196. By Surg., Gynec. & Obst.

The author bases his report on the study of 490 post-mortem examinations. He discusses the incidence, etiology, pathology, and diagnosis of duodenal ulcer. The paper is well summarized in a list of conclusions, which are as follows:

 Duodenal ulcer is a malady of frequent occurrence and one which often passes unrecognized.

2. Although as a rule readily diagnosed, a chronic duodenal ulcer may occasionally exist and give rise to none of the characteristic symptoms, sometimes the first evidence of such a silent ulcer being its perforation.

3. "Silent" duodenal ulcers are met with most frequently in the subjects of arteriosclerosis, and are found for the most part on the posterior wall of

the duodenum.

4. Some toxic or irritative factor, usually within the abdomen and most frequently associated with the colon or appendix, is found in a large proportion of cases of chronic duodenal ulcer.

5. Probably many acute duodenal ulcers are primarily follicular ulcers from the breaking down

of inflamed lymph-follicles.

6. Whatever may be the primary cause of a gastric or duodenal ulcer, spasm of the muscular coats of the viscus is an important factor in deter-

mining its chronicity.

7. The situation of the opposing ulcers on the anterior and posterior walls of the duodenum on the boundary zone of the areas supplied by the anterior and posterior branches of the supraduodenal artery suggests that a common vascular deficiency rather than a contact infection accounts for the peculiar tendency to chronicity and recurrence.

8. This vascular deficiency may be due to arteriosclerosis, but probably it is usually due to spasm of the muscular coats of the duodenum induced by a slight local anæmia consequent to strain on the supraduodenal vessels, this muscular spasm being favored by the increased vagotonus and the irritable condition of the autonomic nervous system

which exists in such cases.

9. The sex incidence of duodenal ulcer is to be explained on anatomical grounds. The relatively high pylorus and short fixed duodenum of the male allows of its vascular supporting ligament, the hepatoduodenal ligament being exposed to strain, which in the female, with her relatively low pylorus and lax duodenum is borne by the left border of the gastrohepatic omentum and lesser curvature of the stomach.

To. The fixity of the male duodenum further predisposes to kinking at the first duodenal angle and thus to an unduly long exposure of its first part to the acid chyme from the stomach, undiluted by bile or pancreatic juice, the regurgitation of which is impeded.

BARNEY BROOKS.

# Draper, J. W.: Studies in Intestinal Obstructions, with a Report of Feeding Heterologous Jejunal and Ileac Cells to a Human Being. J. Am. M. Ass., 1914, lxiii, 1079. By Surg, Gynec. & Obst.

Draper writes of the cause of death in intestinal obstruction. He believes the evidence as to the origin of the death-producing toxin points to an autotoxin from the intestinal epithelial cell, rather

than to the presence of bacteria.

Experiments carried out to support the hypothesis of water starvation as the cause of death, showed the water loss of tissues from starvation, from the administration of pilocarpine, and from duodenal obstruction, was practically the same, notwithstanding the fact that the dogs given pilocarpine were killed long before symptoms of disability were present.

Microscopic examination of the intestinal tract showed such marked capillary dilatation at its beginning and end as to make it probable that the toxins of intestinal obstruction are eliminated both from the stomach and the colon, and this furnishes a working hypothesis on which to explain the result of feeding to duodenally obstructed animals, epithelial cells from the ileum and the duodenum of other animals; i. e., that in some manner these cells render harmless the excreted toxins.

The average length of life of duodenally obstructed animals, fed epithelial cells from the duodenum and ileum of other dogs, was almost twice as long as the controls which were not fed at all, and also of a third set of dogs which were fed on cells from other organs — the liver, spleen, kidney, pancreas, and muscles.

D. L. Despard.

### Behan, R. J.: Functional Ileus. Interst. M. J., 1914, xxi, 965. By Surg., Gynec. & Obst.

Behan defines ileus as any more or less complete obstruction which occurs between the cardiac opening of the œsophagus and the sigmoid flexure of the colon. This obstruction may be either mechanical or functional. He further divides the mechanical into intra-, inter-, and extra-mural changes which occur in the intestinal walls and cause an ileus by pressure on the walls. Under this classification we find as factors causing intramural ileus, foreign bodies, gall-stones, enteroliths, polypi, tubercular and syphilitic cicatrices; intermural ileus caused by local inflammatory swelling of intestinal wall, and of growths; and extramural ileus caused by strictures resulting from adhesions, kinks, intussusceptions, and pressure from neighboring new-growths.

Functional ileus is caused by any condition, either local or reflex, which interferes with intestinal mobility. He places inflammation at the head as a local factor, although the following must also be borne in mind: hæmorrhage into the intestines: purpura hæmorrhagica; thrombosis of vena-mesenterica; trauma; irritation due to some poisons, notably lead, hardened fæces, foreign bodies, and worms. In true reflex functional ileus the paralysis or spasm due to nerve derangement may be either peripheral or central. The peripheral irritation is either local or general; the local irritants act upon Auerbach's centers in the intestinal walls and are the products of drugs or irritating substances in the intestinal lumen. The author cites Biernath's case, in which autopsy revealed a tight stricture 26 cm. above the anus, and no cell infiltration present, to illustrate the result of constant contractures of certain portions of the bowel.

The spastic contractions of the bowel are the result of stimulation of the vagus, the nerves of Auerbach's plexus, and the nervus-pelvicus, or of factors inhibiting the sympathetic nerve. They present no organic changes in the bowel, and this type has been found in Addison's disease, pressure on the splanchnics and paralysis of the sympathetic, after operations for myomata, presence of wounds, ulcerations of intestinal wounds, and from retarda-

tion of nutrition due to tuberculosis.

The author claims that paralysis of the bowel is entirely opposite to spasmodic ileus, and is due to either inhibition of the vagus, the nerves of Auerbach's plexus, or the nervus-pelvicus, or due to stimulation of the sympathetic. Treves reports paralysis of a segment of the bowel in a boy with strangulated hernia, which was relieved by ice applications. Gastric dilatation is a result of paralysis of the vagi, so also is this dilatation found in crises of tabes and Reichman's disease. Paralytic ileus may result from pressure on the mesenteric glands, as in Fenwick's case. Central lesions may also act as causative factors in producing gastrointestinal paralysis, as demonstrated in leutic lesions, meningomyelitis, the emotions, and hysteria.

The symptoms of intestinal obstruction are probably due to a poison elaborated by the mucosa of the obstructed segment. This has been demonstrated by Whipple in his experiments on dogs.

The general symptoms of functional ileus are: vomiting due to reflex action and which soon becomes antiperistaltic; temperature, usually low or even subnormal; pulse, slow at first, then becoming rapid; respiration, slightly increased and early hiccough; and, what is a very important symptom, local distention of the abdomen.

The author goes into this latter symptom more fully, and states that usually on close examination a tumor mass, more or less definite, can be discovered

in some part of the abdomen.

If it is of the gastroduodenal type, swelling will be noticed in the epigastrium and slightly to the right; if the ileus is in the small intestines, the swelling will be found in the right side; occasionally vermicular progressive motion may be noticed if the abdominal wall is not too thick, and upon auscultation gurgling sounds may be heard as the gas passes from the non-active to the distal portion of the gut. If the ileus is of the gastromesenteric type, the tumor mass may give rise to splashing sounds and the stomach tube will bring forth large quantities of greenish fluid. At first an ileus gives rise to no pain, and it is only in the later stages that pain is complained of, due no doubt to slight peritonitis. Later this pain decreases and the vomiting is more of a regurgitation, and as the paralysis increases the patient's condition becomes worse. He says it is not always easy to diagnose this condition, of whatever type it may be. It must be differentiated from all conditions causing a tumor mass, such as pancreatic cysts, enlarged mesenteric glands, or localized walled-off tubercular peritonitis—this latter should be regarded very carefully. A tentative diagnosis should be made when a tumor-like mass is found and when vomiting and locked bowels are present. When these symptoms are present the following facts should be inquired into: Has the patient swallowed a foreign body? Has he gall-stones? Has he had a recent injury to the abdomen? Is or is not syphilis or tuberculosis present? Because of the not uncommon resultant stricture which follows these conditions they are important. No difficulty is experienced in diagnosing the acute stormy onset of gastromesenteric ileus following an operation. Intussusception, strangulated hernia, and volvulus are to be differentiated, but their symptomatology usually aids in securing a correct diagnosis.

After excluding the above lesions, there are only the spasmodic and paralytic types to deal with. And their diagnosis will be suggested by the involvement of the vagus system, with its train of symptoms, as bradycardia, red spots on the face and body, embarrassed respirations, and hyperacidity.

The prognosis is not favorable. According to Küttner 93 cases of dynamic ileus showed a mortality of 63 per cent, and the mortality in acute

dilatation of the stomach is 60 per cent.

The causative factors in producing death are: (1) loss of fluids—22 per cent loss of fluid causes death (Richardson); (2) pressure on heart and lungs (Oppenheim); and (3) toxæmia from absorption of toxines from an occluded loop of gut (Clairmont and Ranzi).

Behan recommends the treatment advised by McLean, in which the aim is to relieve the distention

and fill the depleted vessels.

In the gastromesenteric type complete, thorough, and frequent stomach lavage is recommended. The fluid loss should be supplied either by a Murphy drip or by subcutaneous or intravenous injections of saline. All food and drink should be withheld. Of the drugs relied upon cathartics are positively contra-indicated. The one best drug no doubt is morphia, especially in the spasmodic type, but it is not so good in the paralytic group. Atropine is useful in the spastic type, but eserine and adrenalin are better in the paralytic form. Strychnine, because of its stimulating action on the spinal nerve-ends in Auerbach's plexus, should be given in large doses of 0.5 gr. But if conditions do not improve in 24 hours, operative measures should be tried, the aim being to relieve all the obstructing factors. It must be remembered that if the ileus is of the paralytic type operative interference is of doubtful value, as the same condition often arises in another loop of intestine, and for this reason medicinal measures secure better results. An exploratory operation has in many instances saved the patient's life. L. B. CRAWFORD.

Musser, Jr., J. H.: The Physical Diagnosis of Colon. Interst. M. J., 1914, xxi, 961. By Surg., Gynec. & Obst.

Musser deplores the fact that so much reliance is placed upon the röntgen rays in the diagnosis of gastro-intestinal disorders, especially in displacements of the colon. Because of the inaccessibility of the röntgen laboratory to every one, he advocates a method of physical diagnosis: inspection, palpation, percussion, and auscultation applicable to the demonstration of colonic ptosis. He agrees with Glénard in that a ptosed colon together with a displaced kidney and deformed liver form the triad of

anatomical derangements which are diagnostic of splanchnoptosis. Although only two of these abnormalities are usually sufficient to diagnose this condition, he claims ptosed colon is seldom sought for and that its diagnosis is comparatively easy. Whether stasis results from a ptosed colon, either due to kinks at its hepatic or splenic flexures or to the lowering of its transverse portion, is still a matter of some discussion. Hertz, supported by a large majority of röntgenologists, claims that in cases of ptosed colon the ascending colon and cæcum fill completely and that in response to a stimulus which only occurs two or three times a day, powerful peristaltic waves occur and the contents are shot through the transverse colon to the remaining bowel until defecation occurs. The author lays great stress upon the mucus colitis which these patients suffer from and suggests measures to restore the colon to its normal condition and improve this colitis. The methods of physical diagnosis are greatly aided by inflation of the colon and percussion. A long rectal tube and a bulb through which air is blown are used. This tube he claims, is best left protruding two feet so as to be brought forward and readily used when the patient is in the erect position. Variations of the transverse colon line from four to five inches are encountered in the horizontal and upright positions.

As a rule the outline of the colon cannot be seen normally, but with gradual inflation the transverse portion can be made out. The cæcum also can be recognized as an indefinite tumor in the right iliac fossa. According to Sailer, the cæcum is palpable in 20 per cent of cases; with inflation this percent-

age is greatly increased.

The colon can seldom be outlined by simple percussion, but in conjunction with auscultation a correct conclusion can often be arrived at. First, the bowel should be moderately distended with air and the bell of the stethoscope placed over the cæcum; then the symphysis is gently percussed over and upward until a distinct change in the note is heard; this will outline the lower limit of the transverse colon. By moving the percussion finger in different directions the limits of outline of the transverse colon can be traced readily.

By placing the stethoscope over the pubis and pumping air through the bulb, with each squeeze the stethoscope is moved; when the transverse colon is reached a distinct change in the note will be heard. Some trouble will be encountered at the flexures, but the cæcum will be easily recognized and its limits accurately ascertained.

Lewis B. Crawford.

Goldschmied, K.: Results of Radical Operations for Cancer of the Rectum with Reference to Continence (Resultate der radikalen Operationen des Mastdarmkrebses bezüglich der Erhaltung der Kontinenz). Wien. klin. Wchnschr., 1914, xxvii, 412. By Zentralbl. f. d. ges. Chir. u.i. Grenzgeb.

In Hochenegg's clinic, where the author's material was secured, the sphincter was preserved in 106

cases which were operated upon for cancer of the rectum within the past ten years. In 98 cases the union of the two ends was undertaken: 73 times by circular suture, 21 times by Hochenegg's method of "drawing through," and 4 times by invagination. This shows that even in the clinic where it originated Hochenegg's method is used much less frequently than circular suture. This is explained by Hochenegg, who says that his method is to be used only when a sufficiently well nourished piece of intestine can be brought outside the outlet without any tension.

The immediate results of the different methods are as follows: There was primary healing with the circular suture in 20 per cent of the cases: with Hochenegg's method in 38.1 per cent; with invagination in 25 per cent. When dismissed, 21.0 per cent of the cases with circular suture were completely continent, 19.2 per cent incompletely continent, 49.3 per cent incontinent; with Hochenegg's method, 38 per cent were completely continent, 19 per cent incompletely continent, and 33.3 per cent incontinent. Circular suture gave 41 per cent of permanent recoveries, Hochenegg's method 52.4 per cent, with 37 per cent of complete continence for the former and 48 per cent for the latter. The results, therefore, are better in Hochenegg's method with reference to mortality, continence, and permanent recovery.

Rotter's plastic after-operation was performed in 20 cases with complete continence in 70 per cent. The author explains the causes of the failures in the various methods. In circular suture a relatively greater percentage of formation of spurs was observed, but a relatively smaller percentage of stenoses.

KÖRBL.

### LIVER, PANCREAS, AND SPLEEN

Fowler, R. S.: Splenotomy for Abscess of the Spleen. Long Island M. J., 1914, viii, 338.

By Surg., Gynec. & Obst.

The author reports a case of splenic abscess occurring in a young Italian woman. Her illness, for which no apparent cause could be assigned, began 20 days previous to her examination by the author. She was troubled with a feeling of fullness after meals, but was relieved by vomiting. Her temperature was 10° F., pulse 140, respiration 40. She was anæmic and poorly nourished. A complete examination proved negative except for an enlarged spleen extending beneath the border of the ribs, at which point there was a tender mass the size of an orange. Urinalysis was negative.

The tender orange-shaped mass was incised through an abdominal incision and an extensive splenic abscess found. The spleen was adherent to the abdominal wall and a large quantity of foul-smelling pus escaped. A counteropening was made in the loin at the lowest part of the abscess and a glass tube inserted. For some days there was considerable discharge from the wound; but in a few days there was a change in the character of the discharge

and it became grayish in color. The leucocytes gradually decreased in number. From time to time for several weeks large sloughs of splenic tissue were discharged, but finally the wound closed and the patient fully recovered. EDWARD L. CORNELL.

Hesse, E.: Hæmostasis in Hæmorrhage from Parenchymatous Organs (Zur Frage der Hämostase bei Blutungen aus parenchymatösen Organen). Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Hesse discusses the value of free transplantation of omentum for the purpose of hæmostasis from parenchymatous organs, basing his conclusions on extensive material from the Obuchow Hospital in St. Petersburg. From the experience at this hospital the method gives excellent results in surgery

of trauma of the liver and spleen.

Among 113 cases of liver injury, transplantation of omentum was used 22 times without a single failure. Of these 22 cases 5 died, but all of these had simultaneous injuries of other organs - pancreas, stomach, intestine, and lung. Four of these patients were pulseless before the operation and died soon after. In one case there was death from necrosis of the pancreas. It was a gunshot wound, perforating the liver and injuring the stomach, pancreas, and right kidney. The tip of the omentum was drawn through the canal through which the bullet had passed, and into the left lobe of the liver. and so the abundant hæmorrhage was stopped. On the twenty-first day death resulted from necrosis of the pancreas. Autopsy showed that the omentum had accomplished its object. There were no signs of secondary hæmorrhage, and the omentum was firmly adherent to the liver throughout the whole course of the bullet.

Hesse reports a second case of rupture of the liver of such enormous size that the whole hand could be passed into the rupture. Almost the whole omentum was resected and sutured into the cavity.

Recovery was uneventful.

The method has also given brilliant results in traumatic surgery of the spleen. Among 9 stabwounds of the spleen 3 were treated by transplanta-

tion of omentum. All recovered.

On operation for hæmorrhage from parenchymatous organs the omentum can be taken from the abdomen and used immediately without any special preparation. Because of its simplicity the method has great advantages over the absorbable artificial tampon recommended by Teger and Wohlgemuth. In hæmorrhage from the skull and long bones, free muscle transplantation has been of great service. The free transplantation of tissues containing thrombokinase, such as omentum and muscle, is the method of choice in hæmorrhage from parenchymatous organs.

### SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Waugh, G. E.: The Use of Tuberculin in Surgical Tuberculosis. Am. Med., 1914, xx, 567. By Surg., Gynec. & Obst.

Inasmuch as there is no scientific test for tuberculosis, and as there is a large percentage of error in the differential diagnosis from pyogenic infection, in spite of careful study the value of tuberculin is difficult to estimate. Sufficient time, and an enormous amount of material and clinical evidence, has nowhere brought out a definite dosage as curative for various types. Many claims have been made and investigation has proved that the diagnosis should be questioned before the cure is accepted.

After using tuberculin for five years in all types of tuberculosis, first using Koch's new tuberculin and later Wright's bacilliary emulsion, and often citric acid in addition, with varying dosage, the author has abandoned the use of tuberculin in surgical tuberculosis entirely. H. W. MEYERDING.

Case, J. T.: The Röntgenology of Chronic Joint Disease. Illinois M. J., 1914, xxvi, 153.

By Surg., Gynec. & Obst.

Röntgenology is now an indispensable aid in the diagnosis and prognosis of chronic joint lesions,

especially in deep-seated joints, such as the hip and shoulder. It does not overcome all difficulties, but with it treatment is more intelligent and mistakes fewer.

A röntgenographic examination of patients fifty years of age or more often shows the contour of the vertebral bodies running out into thorns or slight sharp-angled protusions. However, if these protusions are larger or are found in younger people, these findings must then be considered as chronic arthritis or incipient arthritis deformans.

Arthritis deformans shows roundish ball-like exostoses in and around the joints; sharp demarcation of the bones of the joints with formation of osteophytes with lateral deposits on the borders of

the capsule and outside the joint.

In spondylitis deformans the vertebral bodies are asymmetrical. Hypertrophic changes occur in the corners of the bodies and, less frequently, in the In advanced spondylitis, transverse processes. bridge formation and adhesions, deformity of vertebral bodies, and finally complete ankylosis are characteristic findings.

Arthritis urica is characterized by deposits of urates in the tissues of the joint, primarily in the ligaments, but later in the articular cartilage. In the hand these occur as very small osteomata on the

lateral borders of the proximal phalanges.

Among the first changes recognizable on the röntgenogram of a tuberculous joint are increased transparency to the rays and increase in fluid in the synovial sacs. Increased transparency with decreased accuracy of outline and bone detail are very indicative of tuberculosis. This is especially true of the carpals and tarsals. In later stages, ulceration of the joint surface with irregularity of articular surface and enlargement of articular space may be seen. Still later stages show areas of tuberculous necrosis. Healed tuberculosis in joints shows a thickening in the cortex of the bone. In active cases there is want of contrast and detail.

Redard says clear blotches at the level of the epiphysis, increase in circumference of the bone in the epiphyseal region, osteophytes, and irregularity of certain portions of the bones are characteristic of

syphilis.

In syringomyelia the hand shows thickening of the pulp of the distal extremity of the fingers. The last phalanx is hypertrophic and atrophic in structure. All the bones of the hand are atrophic.

Gonorrheeal arthritis shows the same bone changes seen in other forms of infectious arthritis.

Traumatic arthritis shows atrophic or hypertro-

phic changes or both.

R. O. RITTER.

Axhausen, G.: New Study of the Rôle of Necrosis of Cartilage in the Pathogenesis of Arthritis Deformans (Neue Untersuchungen über die Rolle der Knorpelnekrose in der pathogenese der Arthritis deformans). Arch. f. klin. Chir., 1914, civ, 301.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

After long observation of dogs with superficial or multiple circumscribed necrosis of cartilage, the author found pictures that were identical clinically and in macroscopical anatomy with those of human arthritis deformans. Besides the local symptoms of subchondral dissection and cellular substitution with wearing out of the cartilage and formation of fibrous cartilage there was formation of villi and marginal osteophytes. As a result of the injury to the cartilage there were, at points of mechanical impact, abraded places caused by the decreased resistance. The unevenness of the joint surface caused in this way led to secondary changes in the opposed joint surface, which followed the same laws and by wearing down led to abraded places. His studies of human arthritis deformans have shown similar extensive and scattered cartilage necroses with cellular substitution, subchondral dissection, abrasion, and furrows. So he concludes that the same relation may be assumed between the individual phenomena in human arthritis deformans as in animal experiments. ERNST SCHULTZE.

### Vegas, M. H.: Hæmophilia and Hæmophiliac Arthritis. N. Y. M. J., 1914, c, 549. By Surg., Gynec. & Obst.

After reporting a case of hæmophilia, Vegas mentions some of the early writings on the subject and cites several types of cases, one seen by Charves

and Speroni, in which a tumor the size of a child's head occupied the iliac fossa adhering to the bone. Another observed by Kautz, of Vienna, showed submucous hæmatomata which almost obliterated the intestinal lumen.

Relative to joint involvement in hæmophilia, one of the great dangers in operating is the mistaking of a hæmophiliac arthritis with affusion for a tuberculous arthritis. Therefore it is necessary to secure a perfect history, to remember that it occurs in young anæmic individuals, that it comes on spontaneously, that it is painless, and that there is a restriction of movement with a tendency to grow worse.

The condition of a joint after being changed by hæmophiliac arthritis shows emptiness of the joint, erosion of the cartilages, and thickening of the edges of the joint.

The use of the X-ray is very important in securing

a diagnosis.

The knee, hip, elbow, finger, wrist, and ankle joints are the ones usually involved and in the order named.

The prognosis of this disease varies. The acute and subacute forms usually become cured and seldom leave any deformity.

The chronic forms are sure to produce deformity.

The treatment of hæmophiliac arthritis is local

and general.

Cold compresses, uniform pressure, and correct posture are important factors in the local treatment in order that deformity may be prevented.

In the general treatment many remedies have been used, but with no success. Peptone recommended

by Witte has been used with good results.

The best remedy, however, for successful results is the injection of fresh rabbit serum, 15 ccm. intravenously or 30 ccm. subcutaneously — the dose may be repeated in two days.

In regard to operating on a hæmophiliac, if necessary it can be done with ultimate success by first preparing the patient by several injections of fresh rabbit serum.

John H. Shaw.

### Davis, D. J.: The Etiology and Pathogenesis of Rheumatoid Arthritis. Illinois M. J., 1914, xxvi, 158. By Surg., Gynec. & Obst.

The author does not discuss the common groups of arthropathies whose etiology and nature have been fairly well determined but that large group of chronic joint disorders which for a long time have been considered as "probably infectious." These disorders are commonly called arthritis deformans.

An infection, usually with streptococci, very often following tonsillitis, pharangitis, an ulcerated tooth, middle ear or sinus infection, plays a significant rôle

in the etiology of these joint disorders.

Wollenberg maintains that sclerosis and vascular obstruction, partial or complete, is always found and is, in fact, the direct cause of the changes in arthritis deformans. There is no doubt of its importance in certain cases, particularly in old people. In

the etiology of these joint affections, changes possibly due to abnormal metabolism and to disturbance of the inner secretions must be considered.

The organisms most frequently found in the foci of infection, especially the teeth and tonsils, are different strains of streptococci together with bacillus fusiformis and a spirillum which conforms in its morphology to streptococcus refringens.

As a result of this infection there may be degenerative changes leading to atrophic arthritis, or productive inflammation leading to the so-called hypertrophic type. At times marked destruction occurs leading to an exposure of bone with consequent exostosis, nodule formation, and lipping of the epiphyseal margin. R. O. RITTER.

### Billings, F.: The Medical Management of Chronic Arthritis. Illinois M. J., 1914, xxvi, 164. By Surg., Gynec. & Obst.

The author discusses the treatment of chronic

deforming arthritis and the usual coincident myositis. This condition is difficult to handle, and it may take months or years to cure it, a part of which time must be spent in the hospital in order that advantage may be taken of every aid to diagnosis and treatment.

The disease is looked upon as infective and the location of the portal is most important. All progressive types may be checked, and, unless destructive changes have occurred, recovery may take place.

The important foci are the tonsils, dental alveoli, sinuses of the head, intestinal stasis due to abnormal anatomy, chronic peritonitis and vesiculitis seminalis, pelvic disease, chronic pyelitis, chronic appendicitis, chronic cholecystitis, and chronic abscesses located anywhere in the body.

The focus being known, the next step is the removal of the tissues involved or a correction of the condition which permits the existence of local infection. If focal points are not all removed, failure will result. Examination of infected tissues or exudates should be made so that the character of the infection may be determined and autogenous vaccines made.

In the treatment, rest, good air, sunshine, and wholesome food are necessary. In general, drugs are employed as indicated; a pleasant, cheerful

environment is of the greatest value.

The strains of streptococci which cause chronic arthritis multiply in low oxygen tension. occlude arterioles, deprive tissue of nutrition, and produce conditions favorable to their own develop-

In practice, rest is employed as long as motion causes pain; then passive motion may be begun and gradually increased. Autogenous vaccines of the dominant strain of streptococci are valuable, as they increase the defense of the body; but while general measures are absolutely necessary to help the patient, the use of vaccines without the etiologic focus being found and removed is irrational. Bier's method may be practiced after the patient is well on the way to recovery; used too early or too long, it

may cause harm. Forcible stretching of contracted muscles and tendons under anæsthesia saves time. but should not be employed until the patient is actively exercising. Splints, braces, and casts should be used cautiously. No appliances should be used that interfere with the circulation of the blood to the W. H. BUHLIC infected parts.

Roysing, T.: Vaseline Injection into the Joints: Its Indications, Technique, and Results (Über die Vaselineinjektion in die Gelenke: die Indikationen, Technik, und Resultate derselben). therap. Wchnschr., 1914, xxi, 409, 437, 470. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In 1004, Roysing reported two cases of dry traumatic arthritis of the hip-joint, which were restored to function by the injection of sterilized yellow vaseline and in which snapping of the joint and severe pain on walking were entirely overcome. He now reports injection of vaseline in 44 patients, 8 of them bilateral, making 52 injections in all.

The chief dangers of the procedure are embolism and infection. He believes the first can be avoided by making a previous puncture with a trocar to be sure that the inside of the joint has really been reached. He sterilizes the vaseline in an apparatus which he describes as follows: A rubber tube 10 cm. long is provided on one end with a metal tip that can be screwed onto the end of the ordinary vaseline tube, while the other end can be screwed either into the cannula or into a heavy cover. The tube with the cover screwed on is screwed into the vaseline tube and both are boiled for 15 minutes before the injection. The joint is punctured and some synovial fluid collected for examination. vaseline tube is then taken from the vessel in which it has been boiled, the cover screwed off, the tube connected with the cannula, and the vaseline pressed through the tube into the cannula by rolling the tube slowly up from the bottom. The shoulder-joint is punctured by introducing the trocar below the posterior corner of the acromion, the knee at the external corner of the patella. In the hip, the joint is laid bare by an incision 4 to 5 cm. long in the soft parts, above the apex of the trochanter. The trocar is curved to fit the curvature of the head of the femur. For the sake of safety the capsule of the jaw is also laid bare by a small transverse incision below the zygomatic arch. As to the amount of vaseline to be injected, 20 to 25 ccm, are enough for the hipjoint, 10 to 12 ccm. for the knee-joint, 15 ccm. for the shoulder-joint. If no incision is made, but only a puncture, the patients can begin movements of the extremity immediately after the injection.

In the 10 cases of non-traumatic arthritis crepitans the results were only mediocre, and the indications decidedly limited. The synovial fluid was generally increased, more or less turbid, grayish white with flocculi and threads. Microscopically, there were numerous pus-cells, but no bacteria were demonstrated in any of the cases. However, there is no doubt there was an inflammatory process,

whether from chemical irritation or some hitherto unknown microörganism; at any rate, Rovsing advises against vaseline injection in any case where there is a turbid fluid. In those more unusual cases where such forms of arthritis have led to painful snapping joints with deficient synovial fluid, the injection of a small amount of vaseline may be tried, small enough so that the capsule is not stretched or placed under tension, and care must be taken not to produce an exacerbation of the inflammation.

The results in the 20 cases of traumatic dry arthritis were, as the case histories show, very good. This is really the field for vaseline injection, for here there is no inflammation of a toxic or infectious nature, but a connective-tissue formation, a fibrous change in the synovial membrane, a disease which decreases or even destroys the capacity of the synovial membrane for producing synovial fluid. The joint-ends are not protected from pressure and friction and, finally, there is more or less denudation of the cartilage. Roysing's idea is to prevent these processes by substituting vaseline for the synovial fluid. He has also had very good results in o cases in 7 patients with senile disease of the knee-, shoulder-, and hip-joints. Failure to recover completely in two cases was probably due to the fact that one of the patients had also a uric arthritis and the other an arthritis deformans. In 8 cases, vaseline injection was undertaken to prevent ankylosis after arthrotomy and joint resection. In all these patients there were surprising results, so there is no doubt that vaseline injection can be used successfully to prevent ankylosis after resection of tubercular joints, in cases that can be closed without drainage after operation. CREITE.

Shuttee, H. C.: Sprains. J. Mo. St. M. Ass., 1914, xi, 113. By Surg., Gynec. & Obst.

A sprain is a severe twisting or wrenching of a joint with stretching or tearing of one or more of its ligaments and an effusion of serum or blood into the joint cavity and surrounding tissues - contusion or fracture of bones or cartilages may be an associated complication. Violence causes sprains, greater Young adults are violence causes dislocations. more subject to sprains, fractures occurring more frequently in the older subjects. The cardinal symptoms of inflammation are manifested only when infection is developing, the swelling being due to disturbed physiology of the part. An erroneous conception of the pathology led to immobilization and hence support or aid to cellular changes was lessened. Uniform pressure or support to the devitalized parts with a mild degree of fixation has proved a saner treatment.

Muscular contractions and relaxations procure a more vigorous cellular activity of lymphatics and blood-vessels; hence adhesive strapping, supportive in character and applied with uniform pressure, yet interfering little with normal function, aided by the patient's effort to perform the regular function, induces a rapid reparation. Adhesive plaster or moleskin plaster aided by massage of the parts and applied every few days secures uniformly good results.

The Cotterell-Gibney method is considered less effective than the Hood method. Hot and cold water or dry hot air and massage are advised for late cases.

HARRISON W. MALTBY.

#### FRACTURES AND DISLOCATIONS

Lane, A.: Clinical Lecture on Fractures. Med. Press & Circ., 1914, xcviii, 236.

By Surg., Gynec. & Obst.

The author has apparently concluded that the indiscriminate operative treatment of fractures has, up to the present, done more harm than good. In America and among English surgeons the removal of plates inserted at operation is frequent in 48 per cent of cases. The explanation lies in the technique of the operator. Many surgeons, even if they perform the mechanism correctly, do not realize that when they put a foreign body in a wound, they must exercise infinitely greater care than if they were doing an ordinary catgut-enclosed operation.

Lane reports cases as follows:

1. Vertical fracture through the spine of the scapula with restoration of form and function by plating.

2. Fracture of the outer half of the clavicle. The clavicle lends itself easily to plating because it is dense and holds the screws firmly. The objection is the scar, but this can be made almost imperceptible.

3. Fracture of the surgical neck of the humerus successfully plated. In this operation injury to the musculospiral nerve by fragments is avoided with a plate.

4. Fracture at the lower end of the humerus. Fixation with a plate is important here to prevent excessive formation of callus.

5. Fracture of the upper ends of the radius and ulna. In this case, massage has been unwisely given by another physician with the result that excessive callus was developed, causing partial ankylosis.

The advantages of the operative treatment of fractures are: relief from pain caused by movement of fragments; a minimum callus is formed and time of healing thereby shortened; the bone is restored to its normal form; it is not necessary to immobilize neighboring joints.

W. A. CLARK.

Straus, D. C.: Woven Catgut Splints for the Open Treatment of Fractures. Surg., Gynec. & Obst., 1914, xix, 410. By Surg., Gynec. & Obst.

The author believes that in those cases in which it is necessary to perform an open operation for the reduction and fixation of the fragments of a fractured bone, the ideal method of fixation would be by an absorbable device, so as to eliminate any permanent foreign body. He conceived the idea of weaving heavy catgut suture-material in the form of a rug with long fringed ends, the rug to be just a little

shorter than the circumference of the bone, the fringed ends to be used to tie the rug about the bone as a splint. The ends when tightly tied stretch the rug about the bone, holding it firmly in place. The idea has been tested in a limited number of experiments on dogs, with encouraging results. The splints, so far, have been made of raw, rough, German catgut, No. 4 and No. 5, wet during the process of weaving so as to soften it, making it possible to obtain a very close weave. The rugs are so woven that the length can easily be reduced. This is of great practical importance, and is accomplished by having the strands that run the long way of the rug - the warp — consist of separate fibers, while the cross fibers — the woof — are made of one long, continuous strand of gut, which is alternately woven over and under the long parallel strands. To shorten the rug it is only necessary to cut one end of this cross-strand free, unravel a sufficient amount, and then tie the free ends again.

So far, the catgut rugs have been sterilized by the Bartlett iodine method only. In experiments still to be carried out, chromic catgut, kangaroo tendon, etc., will be tried. No trace of the splint has been seen at the end of three weeks and no inflammatory reaction seems to be produced by the presence or absorbtion of the splint, except in a few cases where a serous oozing occurred, ceasing shortly, however,

and healing was per primam.

## Moorhead, J.: The Transfixion Treatment of Femur Fractures. Am. J. Surg., 1914, xxviii, 340. By Surg., Gynec. & Obst.

Moorhead advises the transfixion treatment of femur fractures in which ordinary methods are inapplicable or inefficient, as in—

1. Oblique, spiral, or transverse fractures showing considerable deformity from displaced fragments in which traction on the soft parts alone is likely to

prove inadequate.

2. Compound, comminuted, or complicated fractures in which the parts at or near the fracture site itself cannot be interfered with.

3. Restless, delirious, or otherwise uncontrollable patients, also the aged or infirm in whom decubitus might prove dangerous.

4. Old fractures showing non-union or vicious union in which recorrection is made preliminary to transfixion.

5. Certain fracture-dislocations, or multiple fractures.

6. To obtain preliminary alignment prior to plat-

ing or other operative procedures.

The essential aim of the method is to obtain traction by driving a metal pin, nail, or drill through the skin, soft parts, and bone of the distal fragment, allowing enough of the metal to protrude on either side of the skin so that traction cords leading to a pulley and weights or springs at the foot of the bed may be fastened to it, the limb being supported on some form of padded double inclined plane. The drill is removed at the end of two or four weeks, then

a plaster of Paris spica is applied and worn until the union is sufficiently firm to allow the patient to be out of bed. In some fractures very close to the knee-joint, as in the supracondyloid variety, transfixion can be made through the head of the tibia.

It is an intermediate measure between the closed or non-operative methods such as the various extensions, and the open or operative radical methods, as plating or wiring. It is less hazardous and perhaps more generally applicable than plating because (1) the procedure is simple; (2) the scene of operation is at a distance from the traumatized area; (3) no foreign body is left in the tissues; (4) the parts are always exposed during healing; (5) joint stiffness is minimized; (6) atrophy, joint stiffness, and decubitus can be controlled.

The author does not recommend this treatment where ordinary forms of extension suffice, or when plating or transplanting seem more likely to be efficacious, either because of the nature of the injury or the availability of a surgeon skilled in that work.

He reports 7 cases in which there was no shortening or deformity, and he thinks that the method should find a place in the treatment of certain fractures of the femur.

Henry J. Van den Berg.

Walzel, P. R. von: Operative Replacement of Old Irreducible Luxations and Luxation Fractures of the Elbow-Joint (Über die blutige Reposition veralteter irreponibler Luxationen und Luxationsfrakturen des Ellbogengelenkes). Arch. f. klin. Chir., 1914, cv, 241.

By Surg., Gynec. & Obst.

From his experience the author concludes that Bunge's bilateral incision is the best in arthrotomy for the operative reposition of old luxations or luxation fractures of the elbow, as it gives a free view for the necessary dissection of the joint ends. The dissection must be carried far enough so that complete extension and flexion can readily be carried out without any interference, which is only rendered possible by the most exact extirpation of interposed fragments or cicatricial masses, or sometimes by partial resection of the joint ends in cases of viciously healed luxation fractures. Drainage is not necessary. After the operation the arm is fixed in flexion. If there is no fever, passive motions should be begun as soon as possible. It is highly important that the passive movements should be done very carefully and that they should cause the patient no pain. The after-treatment, especially in children, must be kept up for a long time.

A. Goss.

Nidergang: Operative Treatment of Simple Fractures of the Diaphysis (Étude sur le traitement sanglant des fractures diaphysaires fermées). Thèse de doct., Par., 1913. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

A short historical review of the subject is given by the author stating that Hippocrates reported bone suture.

He takes up the objections to operation in simple

fractures: the transformation of a simple into a compound fracture, the technical difficulties of the operation, the danger of infection and the formation of a fistula, and callus formation. The advantages are exact coaptation, the overcoming of hæmatomata, pain and contractures, the immediate treatment of complicating nerve and blood-vessel injuries, and the more rapid consolidation and quicker restoration of function of the limb. The indications are: Impossibility of replacing fragments, Y-fractures, and those in which there is interposition of soft parts, or multiple fragments, and nerve and vessel complications. Operative treatment is contra-indicated in severe comminuted fractures. which give better results when treated conservatively, and for general reasons, such as advanced age, acute diseases, etc.

Lambotte says that operative treatment should be undertaken one to two weeks after the accident, and only after non-operative treatment has failed. In the meantime the skin must be thoroughly dis-

The author gives a detailed description of the technique of direct and indirect instrumental reposition, and gives illustrations of Lane's and Lambotte's forceps. He describes bone ligature (cerclage), for which aluminum and silver wires are especially adapted, also suture after boring holes in the bone, wedging the bone fragments, enclosing them in metal sheaths, clamp suture and screwing with or without metal prosthesis. In the so-called external bone suture he mentions the fixation apparatus of Jaboulay and Lambotte, which consists of a metal plate fixed to the fragments by means of long screws driven through the soft parts into the upper and lower fragments, which holds them immovable in exact reposition. He has had very good results with it. He also praises Steinmann-Codivilla and Lambret's direct non-operative extension; the latter drives a nail through the bone above and below the fragment and draws the fragments apart with a screw. He thinks both the latter methods excellent because they are so easy to apply that they can be used by the practicing physician.

### Neuhof, H.: Traumatic Intra-Acetabular Separation of the Pelvic Bones. Ann. Surg., Phila., 1914, lx, 367. By Surg., Gynec. & Obst.

Neuhof says that while fractures of the acetabulum are occasionally seen, he has found no record of any cases of intra-acetabular separation of the juvenile pelvic bones unassociated with other lesions of the pelvis. He reports a case of a girl, six years old, who fell while playing, the left leg extending and buckling under her, with the hip striking the floor. The pain was severe. She was treated by rest in bed the first four days, with analgesics. When Neuhof first saw her, seven days after the accident, she walked when urged; limped on the left foot; stood with the left pelvis higher than the right; the left trochanter was less prominent than the right; but there was no ecchymosis. Passive and active

motions were limited and painful. The soft parts were doughy on palpation, but not painful; there was pain only on pressing the trochanter toward the acetabulum and the anterior superior spine toward the tuberischii. Measurements showed the left trochanter to be pushed up and forward a little. Rectal examination was painful on the left side. There was no change in contour. X-ray showed the ilium to be separated from the ischium and pubis in the epiphyseal line in the acetabulum. After ten days in bed she still limped slightly and the X-ray picture was the same. A plaster of Paris spica was applied and worn four weeks. Examination made four months after the injury showed no abnormality.

C. A. Stone.

### SURGERY OF THE BONES, JOINTS, ETC.

Baer, W.: Treatment of Ankylosis (Traitement de l'ankylose). Rev. d'orthop., 1914, xxv, 259.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author gives a historical review of the development of arthroplastic operations. After experimental studies he devised a method in which chromicized pigs' bladders were used for implantation into joints that were to be mobilized. He describes the preparation of this membrane, the usefulness of which histological examination has shown. The implanted membrane showed infiltration mostly of round-cells; there were no giant-cells indicating foreign body irritation. Later the membrane had undergone transformation into fibrous tissue.

A detailed description of the operative technique is given and the results of 52 cases operated upon. In 71 per cent of the author's cases he got good results; that is, painless motion of over 25 degrees. In the jaw, of which he had 4 cases, this is easily accomplished. Mobilization of the hip-joint also offers good chances: he had 20 good results in 23 There is more difficulty in ankylosis of the knee-joint, for here, in addition to motion through 45 degrees, sufficient stability must also be secured. He had 10 cases of the knee-joint with 81 per cent failures. The remaining operations were one each in the elbow-joint, the radio-ulnar joint, and the ankle-joint, and three in finger-joints, in the success of which the involvement of the periarticular tissue, or adhesion of the tendons, was of great significance.

Tubercular ankyloses, Baer thinks, are better adapted for mobilization than septic or gonorrhœal ones, but in youthful patients it is best to wait for ossification of the zone of growth. Operation should not be performed in gonorrhœal ankylosed joints for at least a year, in arthritis deformans not until after the subsidence of progressive symptoms. There were rises of temperature to 38.5 degrees after some of the first operations, but the membrane was never discharged. Therefore the wound was sutured primarily in all cases. The joints were fixed with plaster for three weeks, and then active and passive movements were begun. Duncker.

Tubby, M.: Operative Treatment of Ankylosis (Traitement curatif des ankyloses par la méthode sanglante). Rev. d'orthop., 1914, xxv, 285. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Tubby has operated in 8 cases for the mobilization of an ankylosed joint. Especially good results were obtained in a case of bilateral ankylosis of the hip and in one of ankylosis of the knee-joint. great energy of the patients in the after-treatment was a great aid to the success of these operations. Technically, it is important that the incision should be very large, and the interposed flap of muscle or fascia very broad. In the upper extremity a large space should be created between the bones to be mobilized, as here the chief object is free motion, but in the lower extremity the space should be small, because firmness is of more importance here, and a flail-joint must, above all things, be avoided.

The post-operative pain depends on the size of the space. Muscle-flaps and the peritoneum of cattle are best adapted for interposition. If heteroplastic tissue is interposed, drainage must be established. Post-operative mobilization should not be begun until 4 to 6 weeks after the operation. Earlier movement causes hæmorrhage, loosening of the flaps, and re-ankylosis. PELTESOHN.

Okinczyc, J.: Operative Treatment of Gonorrhœal Ankylosis of the Knee-Joint (Le traitement sanglant des ankyloses du genou d'origine gonococ-

sanglant des ankyroses a. cique). J. de chir., 1914, xiii, 1.

By Surg., Gynec. & Obst.

The author operated upon a case of gonorrheal arthritis of the knee, interposing aponeurosis. The ankylosis recurred, and this led him to take up the question of the effectiveness of this operation. He has collected 18 cases from the literature: the results were very good in one case, good in 4, mediocre in 8, and in 5 there was recurrence; that is, there was recurrence in more than a fourth of the cases, and this, he fears, does not represent the true proportion, because of the tendency of surgeons to report successes and keep silent in regard to their failures. In only 5 of the cases that were successful has the time since operation been long enough to pass final judgment on the results.

The methods used were different. The five successful cases, treated by four different surgeons, were operated on as follows: (1) total resection of the fibrous periarticular mass, followed by the interposition of pediculated flaps of aponeurosis supplemented by fatty tissue taken from the neighboring parts; (2) liberation of the articular surfaces and interposition of fatty tissue, followed by intra-articular injection of fibrolysin three times a week during the post-operative period; (3) arthrotomy, mobilization of the articular surfaces, and interposition of an animal membrane; (4) mobilization and interposition of fascia lata externally and vastus internus internally. In two of the cases of failure periosteum was interposed; so it would seem that periosteum should not be used, but in one of the cases of failure

aponeurosis supplemented by fatty tissue was interposed, and in one case costal cartilage was used.

The cases are not numerous or exhaustive enough for final judgment of the operation to be based on them, but from a study of these cases the author concludes that operation for mobilization is not the treatment of choice in gonorrhœal ankylosis of the knee-joint. If the ankylosis is in good position, abstention from operation should be the rule. If the ankylosis is in a faulty position, operation is justified, for even if reankylosis occurs it will be in a good position, and so the patient will be better off. Operation is also justified in the rare cases of bilateral ankylosis, but the cases in which operation is most hopeful are the cases of limited femoropatellar ankylosis. In nearly all these cases the greater part of the joint movement is regained. If ankylosis is incomplete and motion painful, operation is justified. but in this case the object should be rather to resect conservatively and substitute a complete and painless ankylosis for the incomplete and painful one. In addition to the danger of reankylosis there is that of making a flail-joint. The rule should still hold that in the upper limb the first aim should be to obtain motion; in the lower limb, solidity.

Successful operation is more difficult in the knee than in other joints because the resection necessary to get at the joint predisposes to the formation of flail-joint, and it is more difficult in gonorrhea than in other diseases, because gonorrhœa is essentially a plastic disease; the lesions extend to the periarticular tissues, and thus there is a tendency to reformation of the ankylosis. Histories of the 18 cases are given. A. Goss.

Young, J. K.: The Surgical Treatment of Infantile Palsy. Lancet-Clin., 1914, cxii, 340. By Surg., Gynec. & Obst.

The surgical treatment advised for infantile palsy is tenotomy, osteotomy, tendon transplantation, and nerve anastomosis.

In tenotomies overcorrection is inadvisable and is contra-indicated if reaction of degeneration is present. The success lies in securing a more useful position.

Osteotomies are seldom required, but give splendid results when indicated. Straightening, fixation, and extension is the treatment — open incision the more advisable. Tendon transplantations have given the greatest uniformity of results; however, certain precautions are necessary. The deformity should be corrected before the tendon is transplanted. free play of tendon being secured through the new tunnel; the tendon must be attached under some tension equivalent to normal tension of muscle, and a sufficient time must elapse before the tendons are used.

Nerve anastomosis requires anatomical exactness with precision in identifying the nerves to be united; the axis cylinders must be united. Reaction of degeneration contra-indicates the operation. Part or all of these operations may be required to secure the best possible results. HARRISON W. MALTBY.

#### ORTHOPEDICS IN GENERAL

Ollerenshaw, R.: Clinical Lecture on Orthopedic Cases. Clin. J., 1914, xliii, 574.
By Surg., Gynec. & Obst.

The author gives a very interesting paper bringing out the principal points in the diagnosis of congenital hip. He emphasizes the prominent trochanters and the so-called telescoping of the thigh, with the visible sliding up and down of the great trochanter and femur on the dorsum ilii, the latter sign being absolutely diagnostic. The condition is cited as being a rather rare one, there having been in his clinic only 3 cases among 1,000 patients in the children's out-patient department; and of these 3 cases of true congenital displacement, only one was bilateral. He cites Krönlein's statistics showing the preponderance of the malady among females, and favors the "developmental" theory as an explanation of the cause of the trouble. He urges the importance of early recognition and treatment of the trouble before much walking has been done. Several methods of treatment are mentioned: viz., prolonged extension and abduction extending over several years; the old Hoffa's operation; and the "bloodless" operation which Lorenz has popularized. In speaking of further treatment which consists of plaster of Paris cast fixation (the cast being carried down over the hip and lower calf), he emphasizes radiographing the hip to be sure that reposition has been accurately carried out. The cast is kept on for six months and then the thigh is brought down to an angle of 45°, another plaster of Paris cast being then applied, after which he allows the patient to walk with the aid of a walking machine or crutches.

The treatment of extensive infantile paralysis is next taken up, and special reference is made to the operation known as arthrodesis. Special attention is called to the many cases of flail-leg, in which patients attempt to carry about cumbersome apparatus, which by its heaviness and awkwardness is an impediment rather than an aid; and the value of arthrodesis in these cases is pointed out. In arthrodesis of the ankle-joint, he makes an external incision, excising the articular cartilage from the lower end of the tibia, malleoli, and from the upper surface of the astragalus; a right-angle splint is then applied and, after a week's time, a plaster of Paris

In the case of the knee, a horseshoe incision is made, the articular cartilages and the patella are removed, the joint is closed, and a plaster of Paris cast is applied. Indications for arthrodesis are:

I. Extensive paralysis giving rise to a flail-joint or even to a flail-limb.

2. Paralysis to such an extent that the joint is deformed as soon as pressure is put upon it.

3. In cases in which apparatus is badly borne or in which pressure sores result from its use.

Several fracture cases are cited, in which Lane plating had been satisfactorily used.

H. W. MEYERDING.

Davis, G. G.: The Education of Crippled Children. Am. J. Orth. Surg., 1914, xii, 1.

By Surg., Gynec. & Obst.

Davis points out that in orthepedic diseases, where the crippling is of long duration, where it may be necessary for a patient to be in bed a year or more, that the mental development of the case is as important as the surgical care. Great care should be taken to prevent "mental warp," which makes the patients feel that the world, the hospital, or private people will always take care of them. Some cities are promulgating this kind of training, and it is the orthepedist's duty to see that it is done in his private cases. LLOYD T. BROWN.

Schauffler, R. M.: Treatment of the Deformities Following Infantile Paralysis. J. Mo. St. M. By Surg., Gynec. & Obst. Ass., 1914, xi, 122.

Some physicians, especially some nerve specialists, claim that resultant deformities following infantile paralysis are unnecessary, and that apparatus is not required; severe cases, however, prove this to be untrue. The early and skillful application of splints with regular and continuous systematic massage, will entirely prevent deformities in a large majority of the mild cases. Gravity and weight-bearing, with habitual position passively assumed, and trophic changes are the strongest contributing factors. The author believes that during the acute stage only supportive treatment should be given, followed by preventive treatment which establishes a balance of the affected muscles, and continued until the natural recovery is arrested. Tendon shortenings, transplantations, fascial shortening, and tendon reinforcements by using one of the same group or one of an antagonistic group and maintaining a correct anatomical position, or slight overcorrection, aids nature materially in creating a proper balance and increase of function. The reconstructive treatment is especially necessary in the neglected cases. Simple and practical procedures, as a limited amount of massage, stretchings, mechanical supports, and special exercises, together with a proper selection of operative method, improve every case. Regular observation and supervision are necessary for prolonged periods of time, many never passing beyond HARRISON W. MALTBY. the need of supervision.

Reiner, H.: Pathogenesis of Hallux Valgus (Zur Pathogenese des Hallux valgus). Ztschr. f. orthop. Chir., 1914, xxxiv, 549.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

According to Reiner there is in many individuals a certain predisposition to the development of hallux valgus. In very rare cases intra-uterine pressure may lead to congenital hallux valgus. In most people predisposed to this deformity continuous external influences are necessary to produce the deformity. Among such influences are walking on the tiptoes, walking with shoes that are not resistant enough, and chiefly improperly made shoes, too pointed shoes, or shoes made from too pliable leather.

The pressure of the shoe first places the great toe in a position of abduction, and this position is increased by walking. The tendon of the flexor hallucis longus slides laterally between the first and second metatarsals, and a shortening of the tendon and an increase of the deformity soon results. The only successful treatment of this painful deformity is operative.

GLAESSNER.

### SURGERY OF THE SPINAL COLUMN AND CORD

Calvé, J.: Some Preliminary Observations on Scoliosis. Am. J. Orth. Surg., 1914, xii, 13.

By Surg., Gynec. & Obst.

Calvé and his colleagues have studied the physiological and pathological movements of the vertebral column and thorax, and in a preliminary paper treat only of the movements of rotation of the vertebral column and of their amplitude according to the location of the vertebra. They deal especially with the rotation of the spine; i. e., amplitude of rotation: cervical region - free and very great; dorsal region: (1) upper and middle portions—free and very great; (2) lower portion—difficult and of small amplitude; lumbar region - none.

The author cites experiments showing his reasons for the above outline. Especial stress, from a therapeutic point of view, is laid on the absence of lumbar rotation in normal and pathological cases.

Calvé says that Forbes' explanation of getting his results by torsion, which causes an "indirect derotation of the rib," is insufficient, because, owing to the absence of rotation in the lumbar region, there is also a correction of the scoliosis by a "direct derotation by the vertebræ."

In regard to the pathogeny of scoliosis in general Calvé believes these facts should be considered:

 The invariable length of the rib.
 The impossibility of deforming the upper orifice of the thorax owing to the conformation and structure of the first rib.

3. The orientation of the sternum, which even in the most pronounced cases of scoliosis remains

median and retains its transverse position.

4. The fact that in the most severe cases of scoliosis the costal gibbosity and the lateral plane of the thorax on the same side remain always inside of a sagittal plane, passing through the summit of the armpit and along the external border of the iliac crest.

These four facts, when there is a tendency to scoliosis, may cause an increase in the deformity by

the working of three forces:

1. The bending of the rib, caused by the median orientation of the sternum, and the fact that the greatest curve of the rib is normally in the posterior part, tends to rotate the body of the vertebra to the convex side.

2. Because of the orientation of the sternum, the rib on the concave side of the thorax also tends to pull toward the concave side on the rear portion of the vertebra.

3. A third force having the same tendency is the curvature of the spine itself, which creates a

compression on the concave side of the bodies, and their natural tendency is to escape this by slipping toward the free convex side. LLOYD T. BROWN.

Bucholz, C. H.: Further Studies of the So-Called "Sciatic-Scoliosis." Am. J. Orth. Surg., 1914, By Surg., Gynec. & Obst.

Sciatic scoliosis is not an anatomical entity but merely a symptom. It occurs most frequently between the thirtieth and fortieth year, and is never observed below puberty or above seventy

vears.

Heterologous cases are more common than homologous, and males are more commonly affected than females. Traumatism is the most important etiologic factor. In a marked lateral deviation a flattening or reversal of lumbar lordosis occurs. The prognosis is more favorable in a case with a definite traumatic etiology. Males being subjected to more trauma, single and repeated, lateral deviations are common in males, but rare in women. The following classification gives a concise clinical record of 108 cases carefully examined and observed for a long period.

TABLE I. CLASSIFICATION ACCORDING TO ETIOLOGY AND DEVIATION.

Male patients: Heterologous — single trauma 27, repeated trauma 3, occupational 22, colds 4, alcohol 3, neisser or specific 4, hypertrophic arthritis 5, pathological process 1, neurotic 1, miscellaneous 3. Homologous — single trauma 5, repeated trauma o, occupational 2, colds o, alcohol o, neisser or specific 2, hypertrophic arthritis 2, pathological process 1, neurotic 1, miscellaneous 2.

Female patients: Heterologous — single trauma

4, repeated trauma o, obstetrical 2, gynecological I, hypertrophic arthritis I, pastural and indefinite 7. Homologous — single trauma 1, repeated trau-

ma 1, in the remaining o.

TABLE II. CLASSIFICATION ACCORDING TO AMOUNT OF DEVIATION.

Male patients: Marked heterologous 48, slight heterologous 25, marked homologous 7, slight homologous 8.

Female patients: Marked heterologous 2, slight heterologous 13, marked homologous o, slight

homologous 2.

Several cases of sciatic scoliosis showed sacroiliac displacements which were corrected under ether anæsthesia. In cases with definite trauma the onset of pain is in direct relation to the amount of deviation of the spine and pelvis. The mobility of the spine varies according to the amount of pelvic deviation or list. Muscle spasm, atrophy, and the condition of reflexes vary also according to the deviation of the spine and pelvis.

Many of the X-ray plates show structural changes in bones and cartilages, as well as in soft tissues. A comparative diagnosis of lumbosacral

and sacro-iliac regions shows:

1. A severe ligamentous strain and adjacent bones may be fractured.

2. Surrounding tissues may show severe involvement while the fracture is not extensive.

3. Clinical findings should be compared with X-ray findings.

4. Clinical changes are not always in proportion to the symptons of traumatic and infectious lesions.

5. Comparative X-ray pictures are usually

necessary.

The treatment selected and its success is dependent upon the correct pathological interpretation. HARRISON W. MALTBY.

#### Kleinberg, S.: The Abbott Treatment of Rigid Scoliosis; with a Report of Sixty Cases. Am. J. Orth. Surg., 1914, xii, 134.

By Surg., Gynec. & Obst.

In an impartial review of sixty cases, the author has attempted to prove the definite value of this method.

Individual tolerance, nervous temperament, and home surroundings were found to be important factors which caused about one-third of cases to discontinue taking treatment. Cervicodorsal curves proved to be most obstinate, and in these

no permanent changes were secured.

Double scoliotic curves showed external improvement, but the X-ray findings did not confirm this. The curves being marked, the reduction of one exaggerated the other. If the compensatory curve was slight, greater results were obtained, and a few cases of severe type showed marked improvement, but relapses occurred soon after cessation of treatment. Pain of varying degree was caused by the peculiar position necessary in the cast, the pressure-pads, elevation of low shoulder, the restraint of breathing, and shifting of hips and shoulders. Other factors, such as insomnia, dyspnœa, vomiting, excoriation of the skin, acceleration of pulse, lessened chest expansion, compression of breast, disinclination to exercise, weakness and prostration, militated against the treatment.

Mildly rigid scoliotic spines can be materially improved, but no perfectly corrected spines result from the treatment. HARRISON W. MALTBY.

#### Report of the Committee on the Treatment of Structural Scoliosis to the American Orthopedic Associaton. Am. J. Orth. Surg., 1914, xii, 5. By Surg., Gynec. & Obst.

At the annual meeting of the American Orthopedic Association in June, 1913, a committee, composed

of Freiberg, of Cincinnati, Silver, of Pittsburgh, and Osgood, of Boston, was appointed to investigate and report at the 1914 meeting on the present-day methods and results of treating structural scoliosis.

Through this system of submitting certain unproven therapeutic measures to an unbiased investigating committee, there has been inaugurated a new and efficient method of clinical research which secures for the profession a speedy and im-

partial conclusion.

In order to determine the feasibility of prosecuting the work by means of personal observation, the committee submitted a questionnaire to the members of the association and to such others as were represented as doing especially creditable work in this line, which resulted in the committee asking for personal demonstration of groups of six cases each,

Sever, of Boston, to demonstrate the Lovett-

Sever method.

Adams, of Boston, to demonstrate the Mackenzie Forbes method.

Kleinberg, of New York, to demonstrate the Abbott method.

Abbott, of Portland, Me., to demonstrate his

own original method.

The different methods studied agree in their general plan: the amount of primary correction secured by each is maintained by means of plaster jackets and further correction is sought by cutting windows over the concavity and the insertion of pads over the convexity of the thorax; removable jackets, corsets, or braces being worn afterward while gymnastic treatment is being instituted.

The methods differ in the position in which the trunk is fixed, the method of applying the force, and

the degree of force used.

A percentage system of grading the different methods was adopted. The principal points considered were the severity of the cases before treatment, as demonstrated by photographs, X-ray plates, etc., and the results obtained by the different methods in the various degrees of severity. The grades of efficiency in treatment as reported by the committee were as follows:

Per Cen	
Lovett-Sever's method, as demonstrated by	
Sever 29.	7
Mackenzie Forbes' method, as demonstrated	
by Adams	0
Abbott's method, as demonstrated by Klein-	
berg 31.	8
Abbott's method, as demonstrated by him-	
self 61.	0

It is the opinion of the committee that overcorrection of the deformity is apparently possible by means of the Abbott method in cases of moderate severity and, occasionally, in the very severe cases.

Overcorrection must be secured and maintained for a sufficient length of time to prevent a partial or complete relapse of the deformity.

Abbott's method seems to have given better results in his own hands than in the hands of his followers.

Forbes' method succeeds in overcoming the rotation in some cases.

The Lovett-Sever method shows no decided gain over the older procedures.

In order to inspect a larger series of cases and determine more accurately the value of the newer methods, the committee has been continued for another year.

ROBERT B. COFIELD.

## Abbott, E. G.: The Mechanics of a Plaster Corset in Lateral Curvature of the Spine. Am. J. Orth. Surg., 1914, xii, 30. By Surg., Gynec. & Obst.

In reviewing Adams' paper on treatment of lateral spinal curvature, Abbott again presents the cardinal principles of his method. The spine of youth is flexible and is capable of taking almost any position, while a pathological lateral curvature is an exaggeration with distortion increased to a degree of deformity. In both, flexion with rotation of vertebræ on their vertical axes occurs, the body of the vertebrae always pointing toward the con-

vexity of the lateral bend.

A physiological curvature may become a pathological curvature if maintained long enough, or the reverse may be brought to a greater extreme than the original condition. The forcible correction of lateral curvature is passive, except the breathing. Lateral bending of a spine necessitates rotation of vertebræ; the reverse also is true. Correction is brought about through the unrotating of the thoracic body and vertebræ by a fixed force against the bulging ribs in the construction of the cast with the hammock and pads or by pads inserted later through windows. Force by pads must also be applied anteriorly on the depressed ribs, thereby increasing the flexion of the spine, which admits of greater lateral bending in the opposite direction. Rotation of hips and shoulders facilitates the flexion, consequently greater lateral bending. pull applied by the traction bands with the body weight fixing the bulging ribs on the hammock is half way between a lateral and perpendicular pull, and pulls the thorax, except that portion of the bulging ribs, backward, and this position is maintained while the cast is applied. Later pressure with the pads simply increases this position.

HARRISON W. MALTBY.

#### Don, A.: Pott's Disease in the Cervical Region, with Methods of Bone-Splinting. Brit. M. J., 1914, ii, 460. By Surg., Gynec. & Obst.

The author says Hibb's method is useful mainly in the dorsal region and that Albee's is equally satisfactory in the dorsal and lumbar regions. In the cervical region these methods are not so readily applicable. Practically the only spinous processes which can be used are the second and seventh, the others being too much flattened out. The method Don employs is to expose the spines from below the

seventh to above the second spine by an ordinary central incision, the seventh and under side of the second spines being well cleared of periosteum, and the space packed with gauze to arrest hæmorrhage. A piece of rib long enough to stretch from the tip of the seventh spine to well over the second is quickly excised subperiosteally from a most convenient part of the chest wall next the operator. A hole is drilled in the wider - generally anterior - end of this piece, large enough to fit easily over the seventh spine, which has been cleared of periosteum to receive it. When the piece is adjusted over the seventh spine, with the convexity forward, it is then easy to mark and cut across at the point which will just fit into the groove below the second spine. A small hole for a suture is drilled in the upper end of the piece of rib, and through this is put a stitch of silver wire or catgut, a curved needle being threaded to one end of it. With the needle it is quite easy to get a good grip of the interspinous ligaments and tendons between the second and first vertebræ or the base of the skull and thus to fix the upper end of the splint. Very little depends on this suture, for the muscles and fascia when sutured together over the splint in closing the wound are sufficient to hold it in good position until healing takes place. Should the second spine not be available owing to the disease being in the first or second vertebræ, a length of rib is taken sufficient to be jammed against the base of the skull and fixed there. M. S. HENDERSON.

# O'Neal, A. H.: Report of a Case of Osteo-Arthritis of the Spine, with Remarks on the Diagnosis and Treatment. *Penn. M. J.*, 1914, xviii, 954. By Surg., Gynec. & Obst.

The author cites an interesting case which shows how unreliable and misleading symptoms may be.

The disease is considered a complication of other diseases or simulates some of the pathological conditions of those diseases. The pain of abdominal and chest diseases being caused by local inflammation and stimulation of the nerves indirectly through the spinal cord, painful sensations are made manifest and show cause for difficulty in diagnosis. The main points in diagnosis, as pointed out, are: (1) long durations with exacerbations, worse on one side; (2) possible inaction involvement of other points; (3) careful spinal examination and use of the X-ray. Faulty metabolism is considered a strong etiological factor, and of the proteids and carbohydrates especially. Infections are also considered causal factors.

This disease begins in the most movable parts of the spine, hence lessened mobility is diagnostic, or at least suspicious. The varying gradations of mobility plus compensatory movements complicate the diagnosis. The treatment suggested consists in good hygiene, spinal extensions or supports,

electricity, vaccines, and massage.

The clinical findings show a neuritis, an absorption of lime salts, with a deposit of new-bone about the articular surfaces.

HARRISON W. MALTBY.

## SURGERY OF THE NERVOUS SYSTEM

Sauvé, L.: Surgical Operations in the Gastric Crises of Tabes (Les interventions chirurgicales dans les crises gastriques du tabès). Prog. méd., 1914, xlii, 205.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

It may be said in regard to the pathogenesis of crises that typical crises cannot be attributed to the vagus. To be sure there are vagus crises, but they are not painful; they consist rather in nausea, vomiting, and crises of the larynx, pharynx, and heart. Typical crises are very painful and associated with disturbances in the region of the intercostals. Their origin is in the posterior roots of the fourth to the tenth segments, not in the stomach, where they are only localized. They ordinarily appear in the beginning of tabes and cease when the nerve-fibers in the roots and the ganglion are destroyed by the disease.

Why should operation be performed when the crises stop of themselves and do not cause death? Operation should be performed only when the crises interfere with nutrition; when weakness increases to such an extent as to threaten life; when the crises are very frequent, long, and painful; when they cause cachexia; when they do not show any tendency to retrogression; and when they sim-

ulate severe stomach disease.

According to the pathogenesis, only operations should be performed that exclude the ganglion and the posterior roots, which are the origin of the pains. Therefore the following operations should be rejected: Hoenel's simple laminectomy, Schüller's incision of the central sensory tracts in the surface of the cord, Jaboulay's removal of the solar plexus around the aorta, Exner's double vagotomy at the

cardia, which is only to be recommended in vagus crises and to overcome the vomiting of the typical crises.

The operations which exclude the ganglion may

be divided into three groups:

1. Operations outside the spinal canal of the type of Frankl's operation, which is not very severe. The intercostals from the fifth to the eleventh or twelfth are laid bare without opening the spinal canal, and torn out, and with them the posterior root. The disadvantages are that the ganglion is not directly affected, but by tearing out the posterior root chromatolysis is caused in the cells of the ganglion; therefore the operation is unreliable. Gambier in 1913 reported 19 cases with 8 recoveries, 9 recurrences, one improvement, and one death.

2. Operations inside the spinal canal — intradural — of which Förster's operation is a type, consist of resection of the posterior roots from the fifth to the eleventh segments on both sides. The disadvantages are: considerable mortality and fre-

quent recurrence.

3. Operations inside the spinal canal — extradural — are as effective as the second class of operations and as harmless as the first. Guleke incises the posterior roots outside the dura, and Tinel and Sauvé ligate them on account of the severe hæmorrhage from lesions of the plexus of veins in incision.

The author recommends that Frankl's operation be performed first; if there is recurrence, then the posterior roots should be ligated by Tinel and Sauvé's method, or ganglionectomy performed by Sicard and Desmarest's method.

STREISSLER.

## SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Davis, J. S.: The Use of Small Deep Skin-Grafts. J. Am. M. Ass., 1914, lxiii, 985.

By Surg., Gynec. & Obst.

Davis has followed the idea of Reverdin, as introduced in 1869, but instead of using small superficial grafts for covering granulating surfaces he uses what he terms "small deep grafts." He says that grafts which are somewhat deeper and contain more of the true skin give a more stable healing and the final result is more like the normal skin in character than when the thinner grafts are used. Autografts usually take best.

Clean, firm, rose-pink granulations make the best surface for planting grafts of this type. On the day preceding operation all secretions and crusts are removed, the granulations are painted with tincture of iodine and dressed with balsam of Peru and castor oil 1:3, or with boric or salt gauze. At

the time of operation this dressing is removed and the wound washed carefully, after which it is thoroughly dried, as grafts hold better on a dry surface.

The area from which the grafts are obtained is prepared by shaving, cleansing with soap and water, then with ether, and later with alcohol. A local anæsthetic of 1 per cent quinine and urea hydrochloride, or 0.5 per cent novocaine and adrenalin, is usually enough. The infiltration anæsthesia does not seem to affect the viability of the grafts.

The technique of obtaining these grafts is to pick up a portion of skin on the tip of a needle and cut the little pyramid, thus formed, at its base with a scalpel. The grafts thus obtained are placed in rows 5 mm. apart. When 2 rows are in place a strip of rubber protective 1.5 cm. wide is applied over them; then it is pressed down firmly, which causes the edges of the graft to uncurl and lie flat. The next



Drilling surface to diploë (Mayo).

two rows are similarly covered, the different strips of rubber protective, however, overlapping. The ends of the strips may be fastened to the skin by means of a few drops of chloroform. Strips of moist salt gauze and immobilization is all that is necessary.

The patient should be kept in bed and the dressings changed on the second or third day and the wound irrigated with normal salt solution. The next dressing should be a bland ointment on some old linen, and, if the growth is not vigorous, 8 per cent scarlet red or zinc ointment should be applied. When the new epithelium has covered the surface of the wound, the dressing may consist of a dry powder, as zinc stearate, and the surface exposed to the air. A marked desquamation may result; this, however, can be controlled by the application of olive oil.

The author states that the shrinkage in the size of the wound after grafting with small grafts is in some cases quite remarkable. The grafts seem to stimulate marginal epithelium in some way.

EUGENE CARY.

Mayo, C. H.: The Preparation of Dry Bony Areas for Skin-Grafting. Ann. Surg., Phila., 1914, lx, 371. By Surg., Gynec. & Obst.

The author states that while the principle of the method is not new, the simplicity of the technique and the fact that it is so seldom used seems to war-

rant a brief description.

By means of a small drill the entire dry area of bone is perforated like a sieve, or cribriform plate, over its entire surface as shown in the illustration. These perforations are about a quarter of an inch apart and penetrate to the diploë of the skull or to the blood supply of the bone involved so that each perforation shows a slight hæmorrhage. Through these perforations, granulations are rapidly thrown out and soon merge on the surface, allowing an abundant blood supply for the skingrafts.

Since infection of the diploë or vascular area of the bone may occur, such a wound must receive excellent care, at least until protective granulations appear. For a number of years past several cases have been thus treated. These have included large areas of the skull remaining after the excision of carcinoma, sarcoma, or infections with pneumococci. The speedy healing of the wounds has been very

gratifying.

Occasionally, recurring ulcer of the leg in elderly people involves the bone also. The usual history of such cases is that when young they had a prolonged osteomyelitis with extensive destruction of both bone and soft tissues. The scar of the skin is solidly attached to the bone which early in life furnishes nutrition to it, but as time passes the bone becomes of ivory hardness and occasions indolent ulcers, due to malnutrition, which recur from time to time. While some cases may be readily covered by sliding adjacent tissue over the areas, it is a simple process to drill a few openings into the bone until it bleeds freely. The resulting granulation tissue with its new yessels furnishes nutrition for the denuded bone.

#### MISCELLANEOUS

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSES, ETC.

Chastenet de Géry, P.: Tolerance of the Tissues for Foreign Bodies, Especially Rubber Grafts (La tolérance des tissus pour les corps étrangers à propos des greffes de caoutchouc). Gaz. d. hôp. civ. et milit., 1914, lxxxvii, 809.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author gives a general discussion of the degree of absorption by the body of various substances, taking into consideration not only their physical and chemical properties, whether they are smooth or rough, whether they are movable or motionless in the tissues, and whether they are infected or sterile, but also, and chiefly, the nature of the tissues in which they lie. For instance, muscular or serous tissue bears a foreign body better than cellular tissue.

The author concludes that rubber is a material that is closely related to the body (not the hard, vulcanized form, but the soft elastic rubber), and that it is a suitable material for replacing soft tissues. Even blood, which is the most sensitive of the tissues to foreign bodies, does not react to it by coagulation, as was shown by replacing a part of the aorta in a dog by a rubber tube. There was no dilatation and no contraction, and after months it was functioning normally. It may be used instead of fascia, fat, and muscle in ankyloses and adhesions. Glove rubber may be used. Fieschi had excellent results with his "new flesh," a rubber sponge that was used to close the femoral ring; it was completely penetrated by granulations and took without any reaction. It is the best substitute for fat, aponeurosis, and muscle in plastic operations.

#### SERA, VACCINES, AND FERMENTS

Schubert, G.: Treatment of Tumors with Tumor Extracts (Die Behandlung von Tumoren mit Tumorextrakten). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 487. By Surg., Gynec. & Obst.

Schubert describes 8 cases that he has treated by Lunckenbein's autolysate method. While the results were not brilliant, most of the cases were in such an advanced stage that little could be expected of any method of treatment. In one case of sarcoma of the tonsil there was marked improvement, but the patient refused further treatment on account of the slight pain of the injection. In a case of cancer of the breast the enlarged glands in the axilla and neck underwent marked regression. It would seem, therefore, that this treatment offers hope of further development. It offers the advantage over radiotherapy that it is constitutional in its effect, while the latter is purely local. There was never implantation metastasis at the site of injection.

The question is discussed of whether the reddening at the site of injection can be regarded as a positive tumor reaction and be used for purposes of diagnosis. Abderhalden has succeeded in making rat sarcomata disappear by injecting extracts of the sarcomata into dogs and then injecting the serum from the dogs into the sarcomatous rats. He is now undertaking experiments of the same sort in human beings with serum obtained from horses after the injection of extract of human cancers.

A. Goss.

#### BLOOD

Wohlgemuth: A New Method of Stopping Parenchymatous Hæmorrhage (Eine neue Methode zur Stillung parenchymatoser Blütungen). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Hæmostasis by organic tissues is an emergency measure and by no means to be relied upon, because it is pushed aside by fresh hæmorrhage. Kocher-Fonio's coagulen is better, especially in hæmophilia, but less suited for profuse hæmorrhage from the veins. As a general rule it is not the ferment that is lacking, but the physical condition that must be improved. From this point of view

the author shows that the tampon produces ideal conditions. The disadvantage is that the tampon must be removed and this gives rise to secondary hæmorrhage; therefore, absorbable tampons must be used. The author, in conjunction with Jeger, of Breslau, has devised one. The material is prepared from fresh sheep's intestine, which is treated in a certain way. When this was used, wedge-shaped excisions taken from the kidney caused no hæmorrhage. Profuse hæmorrhages from wounds of the liver and spleen were promptly stopped. The material was absorbed without any reaction, and after a few weeks a few elastic fibers could be seen in the microscopic specimens only.

JEGER reported that he had also stopped hæmorrhages from the carotid and the brain sinuses with

the aid of this new material.

KOCHER, of Bern, stated that he had long ago been convinced that contusions caused the majority of post-operative thromboses. Before every operation he looks for old thromboses. When varices exist he performs Trendelenburg's ligation with multiple incisions. He lets the patients get up soon in order to guard against slowing of the blood current. Fonio was led to the making of coagulen by examining the blood in Basedow's disease, which is known to coagulate poorly. He recommends coagulen for venous and parenchymatous hæmorrhage, for example in transplantation of bone. He lays special stress on the avoidance of secondary trickling from the wound. Primary suture can often be used and, for example in goiter operations, drainage may be avoided. Twentyfive years ago Paulstedt prepared a tampon material from sterilized catgut, but the results of his experiments were not published.

One of the participants in the discussion pointed out that rise of pressure in the vena cava is influential in post-operative thrombosis. The wall of the vein becomes soaked with blood. Early rising is a two-edged sword; although it avoids interference with the venous circulation, it leads to

rise in pressure and so to thrombosis.

König, of Marburg, has found that with transplantation, especially of fat, necrosis takes place at the point where the transplant is embedded. He implants aseptic foreign bodies to stop hæmorrhage, especially sponges which take aseptically and are quickly penetrated by living tissue.

Albrecht, of Vienna, has used bone ash on a

substance resembling pyrocatechin.

Perthes, of Tübingen, uses for the same purpose a fluid prepared from the extracted juice of the

thyroid gland, according to Schlossmann.

Körte, of Berlin, uses pieces of omentum to stop hæmorrhage from the region of the gall-bladder, but without resecting them. Thromboses and emboli most frequently appear in septic processes in the abdominal cavity. He has never had any good results from raising the foot of the bed, and likewise does not commend early rising after laparotomies, for he has seen embolism result.

MÜLLER, of Rostock, says that statistics show that early rising has markedly decreased the fre-

quency of thrombosis after laparotomy.

FRIEDRICH, of Köngisberg, in hæmorrhage from parenchymatous organs, recommends temporary clamping of the hilus, the use of the contused tissue as a tampon, and suture of the capsule. He thinks that extirpation is too frequently performed. He has frequently seen aseptic thrombi as the cause of post-operative pulmonary embolism, these thrombi originating after menstruation in the parauterine venous system.

Von Haberer, of Innsbruck, wondered that all the speakers on the subject had discussed the visible varices of the saphenous veins. He considers they are not the ones that play the most important part in post-operative thrombosis and embolism. He regards as much more dangerous the deep veins of the calf, where deep ascending thromboses may form very gradually, as he had recently seen in a very tragic fatal case after herniotomy. In such cases he believes the proposed ligation of the saphenous vein for the purpose of preventing thrombosis may not only do no good, but may do positive injury.

DREYER, of Breslau, demonstrated an especially long embolus of the femoral artery coming from the arch of the aorta, extracted above Poupart's ligament after the injection of salt solution through a

deep incision into the artery.

RIEDEL, of Jena, thinks that the origin of thrombosis is less simple than it has been made to appear. He pointed out its rarity after operations on the lower extremity, especially on the knee-joint. He doubts whether it occurs in children under 11 years of age. Moreover, thrombosis is almost always on the left side, probably because the left vein, crossed at right angles by the artery, passes between the latter and a small vein; therefore, immediately after the operation he has the left leg elevated. He thinks that superficial breathing and the defective suction on the blood resulting from it are responsible for the frequency of thrombosis after laparotomy. In conclusion he calls attention to the thrombi of the prostatic plexus in men. KATZENSTEIN.

Fonio, A.: Effect of Intravenous and Subcutaneous Injection of Coagulen Kocher-Fonio in Animal Experiments and Therapeutically (Über die Wirkung der intravenösen und der subcutanen Injektion von Koagulen Kocher-Fonio am Tierversuch, nebst einigen therapeutischen Erfahrungen).

Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, 642.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The blood-platelets are the specific carriers of thrombogen and the chief cause of coagulation of the blood. Fonio prepared a 5 to 10 per cent solution of animal blood-platelets in physiological salt solution and sterilized it by boiling it for two minutes. He injected 20 to 500 ccm. of this solution intravenously into dogs and rabbits, and obtained in every case a marked decrease in the coagulation time. Subcutaneous administration had a similar but slighter effect. He then used the remedy in a

series of patients with severe hæmorrhages with very good results. In melena neonatorum, nasal polyps, and hæmorrhage from stomach ulcers prompt hæmostasis was secured. As to dosage, he gives 50 to 70 ccm. of a 3.5 per cent solution intravenously and then enough subcutaneously so that the patient has had in all 5 gr. coagulen — that is what he calls the preparation.

The cases must be considered individually—the more anæmic the patient, the smaller the dose. Coagulen treatment is indicated in severe hæmorrhages of all kinds, and also prophylactically before operations, in obstetrics and in hæmophilia. It is contra-indicated when there are changes in the intima of the blood-vessels and in all diseases that show a tendency to the formation of thrombi, such as arteriosclerosis, syphilis, varices, phlebitis, aneurism, uncompensated heart diseases, pyæmia, sepsis, etc.

In conclusion, the best known methods of hæmostasis are reviewed and Fonio states that only direct transfusion of blood meets the simplest theoretical indications, as it introduces into the body an excess of the substances that produce coagulation. As coagulen contains one of the chief factors that induce coagulation, it is next best in effect to blood transfusion. The extraordinary ease with which the solution is made is a factor of importance in its practical usefulness, as is also its simple method of administration, the best method of which is a combination of intravenous and subcutaneous injection. Its use is still in the initial stage. Vorderbrügge.

Nagoya, C.: Infectious Thrombosis (Über die Frage der infektiösen Thrombose). Virchow's Arch. f. path. Anat., etc., Berl., 1914, ccxvi, 287.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Experiments were made on dogs and rabbits with streptococci, staphylococci, and pneumococci. After laying bare the vessel to be experimented on — the veins of the abdomen and neck and femoral arteries a fresh culture of the bacteria was placed directly on the vessel wall with a platinum wire. The main trunks and collaterals were carefully guarded from injury, which might lead to a change in the bloodpressure, so that the thrombus without any mechanical alterations could be studied. Serial sections of the vessels were made, and examination of them showed that a thrombosis can be produced in the vessel by an infectious process directly on or in the neighborhood of the vessel wall, without any other etiological factors, such as slowing of the current, injury of the vessel wall, chemical changes in the constituents of the blood, etc. These thrombi contained a thrombus of blood-platelets as a nucleus. There was no direct relation of the bacteria to the thrombus formation.

Any particular rate of speed of the blood is of no importance in the origin of thrombosis; slowing of the current is only a secondary, auxiliary condition. But Ribbert's view is right that endothelial injury or changes in the walls are the decisive factors in thrombosis.

ZIEGLWALLNER.

Voelcker: Experimental Study of the Causes of Post-Operative Thrombosis and Embolism (Experimentelle Studien zur Ursache der post-operativen Thrombose und Embolie). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Pulmonary embolism is preceded by a prodromal stage with subjective symptoms and increasing socalled mounting pulse. On autopsy, brownish liquefied blood-clots are found in the depths of the wound. These facts, as well as the late appearance of the embolism 10 to 20 days after operation, led the author to think that a toxic action, proceeding from the changed coagulum was the cause of the disease. A direct imitation of the conditions in animal experiments produced no results, but the intravenous injection of small quantities of autolyzed blood for a few days did. The animals became emaciated and, about 20 days after the last injection, died. On autopsy white thrombi were found in the right side of the heart and also in the left side, and frequently there were thrombi in the lungs. All this occurred only when sterilized blood was used. Voelcker believes therefore that embolism occurs in human beings when the veins at the site of operation are not well ligated and disintegrated blood is carried through them into the circulation. This explains the frequency of thrombi after the Trendelenburg position and their rarity after ligation en masse. KATZENSTEIN.

#### BLOOD AND LYMPH VESSELS

Frisch, O. R. von: Experience with Aneurisms in Military Surgery (Kriegschirurgische Erfahrungen über Aneurysmen). Beitr. z. klin. Chir., 1914, xci, 186. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The number of traumatic aneurisms has greatly increased over those observed in former wars. Among the 900 wounded in the Reserve Hospital at Sofia there were 16 cases of aneurism, all but one of which were operated upon. Blood-vessel injuries may be caused by spent bullets as well as by grazing bullets. Grazing shots of the vessels, because of the stronger elastic contraction of the walls and the bending of the lumen of the artery, are more apt to produce aneurism than penetrating wounds, in which the blood current may not be interfered with and the entrance and exit wounds may be sealed up.

Diagnosis could be made at first in only a small percentage of the cases, for in many of the cases all of the symptoms were lacking, especially the circumscribed tumor, the rhythmic murmur, and pulsation. In some cases extensive subcutaneous and intermuscular hæmatoma confused the diagnosis. In some cases there was not even a rise of temperature and failure of the peripheral pulse. If all these symptoms fail, the suspicion of an injury to the artery is justified if a marked swelling of an extremity after a shot into the deeper tissues, that was considered an aseptic hæmatoma, does not decrease in size after several days' conservative treatment. If there is also continuous or increasing pain and marked functional disturbance the diagnosis of aneurism is probably correct.

Every aneurism should be treated surgically. Gunshot injuries of the vessels, if there is no hæmorrhage or marked infection, after as complete immobilization as possible, should be sent to a good reserve hospital. The best time for operation is in the third to the fifth week, when the track of the bullet has healed aseptically, the aneurism has not yet been transformed into an organized sac, and a sufficient collateral circulation has been established. The circulation should be cut off, preferably by an Esmarch's bandage, during the operation. If an Esmarch's bandage cannot be applied, the artery should be laid bare toward its central end and a Höpfner's artery forceps applied. Signs that the collateral circulation have been established are: (1) normal color of the periphery; (2) arterial bleeding from the peripheral opening of the injured artery; (3) stasis peripherally from the clamped vein.

If the circulation is defective an attempt to suture the vessel is justified. Von Frisch has always performed the radical operation by Kikuzi's method of intracapsular ligation, opening the sac freely and emptying it out. The injured place, which is easy to locate on account of the bluish white coloring of the intima, is seized and ligated. The author has never found degenerative changes after this method of operation, which is the simplest for the operator and the safest for the patient. GROTH.

Neal, D. W.: Arteriovenous Anastomosis in the Upper Extremities for Impending Gangrene. Illinois M. J., 1914, xxvi, 171.

By Surg., Gynec. & Obst.

Neal gives a brief review of the development of arteriovenous anastamosis, a résumé of the procedure as applied to the upper extremity, and a complete report of one case.

The first attempt at anastamosis in man was by Santrustejin in 1902, although Frank, Raymond, Pettit, and others had experimented along these Since 1902, Carrel, Bernard, Horsley, and Bernheim have gradually improved the technique and placed the procedure on a firm basis.

Eighty cases have been reported with successful results. Of these, 6 only were in the upper extremity, because, as the author states, indications for anastomosis in that part are fairly rare, and the operators are reluctant to work with such small vessels.

The author's case was a man of 52, who had been enjoying excellent health except the loss of use of the right leg, due to an attack of anterior poliomyelitis at the age of 7. For a crutch he used a broom-stick with cross-bar so that the entire weight of the body was borne by the right axilla. In 1913 a severe pain developed in the right hand, elbow, and axilla, the pulsation of the arteries gradually disappeared from the arm as far as the shoulder, and the entire arm became cold and cyanotic with a

gangrenous area the size of a dollar on the dorsum of the hand.

At operation, the axillary artery and branches below the acromial thoracic were thrombosed and completely occluded. An anastamosis was made by suture between the artery and vein at this level. Immediately following operation, pulsation was noted in the superficial veins, the color improved, and the skin became warm. Five months later the result was ideal.

The author emphasizes the possibility of conservative treatment and recommends the use of the Lespinasse magnesium rings in place of the suture.

The conclusions are:

1. The anastamosis should be done more frequently.

2. The operation is successful in 85 per cent of cases.

- 3. The operation is no more severe than amputation.
- 4. Nothing is lost by anastomosing first, as amputation can follow if necessary.

5. End-to-end anastomosis is the best method.

6. The results appear to be permanent.

7. Anastomosis has entirely displaced thrombotomy.

PHILLIPS M. CHASE.

#### POISONS

Günther, E.: Reducing Power of the Tissues in General and Local Infections (Über die Reduktionskraft der Gewebe bei den allgemeinen und lokalen Infektionsprozessen). Arb. a. d. Geb. d. path. Anat. u. Bakteriol., Festschr. f. P. v. Baumgarten, Tübingen, 1914. ix, 316.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Günther studied the reducing power of the tissues under pathological conditions by means of vital staining; he used 10 ccm. of a 0.3 per cent solution of methylene blue to the kilogram of weight in rabbits. To study the reducing power in general infectious processes he made a trephine opening in the skull and then infected the animals with anthrax and chicken cholera. The results were not uniform in anthrax because of the slow course of the disease, but in the rapidly developing septicæmia from chicken cholera ending in death, the reducing power of the body cells, measured in the brain, was markedly decreased.

A different technique was used in the study of local infectious processes. The rabbits, in this case, were previously treated with killed tubercle bacilli or with non-virulent living bacilli of the human type, or with highly virulent bacilli. The methylene blue solution was injected intravenously in different stages of the tubercular disease and the animals killed after three to five minutes. The lungs were then immediately examined and the reaction of the tubercular foci to the coloring matter determined. From the beginning of tubercle formation there was a decrease in the reducing power of the tubercles. There was also a zone with decreased reducing power around the tubercles.

M. von Brunn.

#### SURGICAL THERAPEUTICS

Reymond, G.: Treatment of Tuberculosis, Particularly Surgical Tuberculosis, by Recalcification (Contribution à l'étude du traitement de la tuberculose et en particulier du traitement des tuberculoses chirurgicales par la méthode de recalcification). Thèse de doct., Montpellier, 1913.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The empirical treatment of tuberculosis with calcium salts is old. A theoretical basis for it was set forth in Robin's work, in 1895. Normal calcium metabolism is of such a nature that the amount of calcium present in the body cells and fluids is constant. If there are variations in the calcium intake or excretion, the skeleton assumes the function of regulation, giving up calcium when it is needed or taking up any excess. Before and in the beginning of tuberculosis the calcium intake is decreased by gastro-intestinal disturbances, acid fermentation, and general acidosis, and the excretion is increased by the action of toxins, increased oxidation, and fever. The consequent calcium impoverishment is made up at first as far as possible by the skeleton. to such a degree that tubercular patients often float on the water in their bath. Later, general calcium impoverishment takes place when the skeleton can no longer make up the deficit.

The question is yet in dispute as to whether the demineralization is a cause or an effect of tuberculosis. The facts remain that tubercular lesions heal by calcification, that tubercular patients are demineralized, and that the administration of calcium has

a favorable effect on tuberculosis.

The treatment is not limited to the administration of calcium, but also undertakes to lessen the excretion of calcium. This is done by decreasing acid fermentation and by increasing the alkalinity of the body fluids. For this purpose overnutrition is avoided and sufficiently long intervals allowed to elapse between the meals. Alcoholic drinks are forbidden, as well as acid and fermentation producing foods (cheese), and butter and sauces. Two hundred to three hundred gm. of bread should be eaten daily; also an abundance of vegetables, but little meat. The only drink allowed is carbonated lime water. A powder is given three times daily, consisting of calcium carbonate 0.5, calcium phosphate 0.2, magnesium calcarea o-0.15, sodium chloride o-0.15. With the beginning of gray stools or constipation the dose is decreased.

The mode of action of the calcium treatment is not exactly clear; the assimilation of the calcium salts is possible. At any rate the skeleton takes up calcium, the teeth become hard again, oxidation decreases, and the fever declines. In patients in the first and second stages of pulmonary tuberculosis there is a rapid improvement in the general condition; on a light diet there is an increase in weight, which of course does not begin until the patient has been under treatment a considerable length of time. Gradually the local symptoms and the signs on auscultation disappear. There are good results also

in tuberculosis of the larvnx. The same is true of tubercular peritonitis, in which surgical intervention is only occasionally indicated in the forms with ascites.

The author shows the favorable effect of the treatment in peritonitis, epididymitis, and cervical gland tuberculosis by means of case histories from his own and others' experience. In osteo-arthritis the ad-ministration of calcium is a supplement to other methods of treatment. HARRASS.

#### ELECTROLOGY

Stillians, A. W.: The Present Status of Radiotherapy in Europe. Chicago M. Recorder, 1914, xxxvi, By Surg., Gynec. & Obst.

Stillians states that the reaction against immense doses of radium has already set in on account of severe immediate as well as late injuries having resulted. Good effects can be obtained by smaller and more careful dosage. The increase of the distance of the radium from the body is also a step in the right direction. The technique, however, must be developed yet. Radium has not superseded the röntgen rays even in pelvic carcinoma. The most brilliant results were obtained with röntgen rays, while a fair percentage of cases have received wonderful benefit from radiotherapy. However, recurrences are still possible.

Efforts to aid radiotherapy by the intravenous injection of the salts of cholin or by the production

of antibodies are still experimental.

Methods of measuring doses are still imperfect. The greatest experience and painstaking care are required. Besides this difficulty there is a wide variability of sensitiveness to radio-activity.

The results of röntgentherapy in menorrhagia are brilliant; injurious after-effects are much less frequent than had been anticipated, but "caution and patience" must still be the watchword of the radiotherapeutist. LEOPOLD JACHES.

Holding, A. F.: The Relative Value of Radium in Dermatology. J. Am. M. Ass., 1914, lxiii, 741. By Surg., Gynec. & Obst.

Holding gives a résumé of the relative value of radium in dermatology in comparison with other more available and accessible physical methods, such as the X-ray, high-frequency desiccation, ultraviolet rays, caustics, carbon dioxide snow, and surgery. In comparing the relative value of these methods the following eight points should be considered:

I. Cost. Radium is far more expensive than any of the other methods. Massive röntgen rays, electric desiccation, and ultraviolet rays come next in expense. Surgery and caustics are the cheapest.

2. Ease of application. As to ease of application, much depends on the training of the person who administers the treatment. Each therapeutist will naturally do the best work with the greatest ease by employing that agent with which he is most familiar. Other things being equal, radium and caustics are easier to apply than the other agents in question.

3. Time consumed in treatment. Radium applications require much longer time than any of the other methods. They require hours while the other

treatments require minutes.

4. Pain. Radium, röntgen ray, and ultraviolet light treatments in proper dosage cause no pain. Electric desiccation and carbon dioxide snow cause slight pain. Surgery and cauterization are very painful and require a local anæsthetic. Chemical caustics are the most painful.

5. Cosmetic effects. Cosmetic effects are the best after radium, röntgen rays, ultraviolet light, desiccation, and carbon dioxide snow, and the poorest

after surgery or cautery.

6. Dangers. With a proper technique there is no danger with any of these methods. Poor technique is a de facto contra-indication for the use of any

agent.

7. Superficial healing and deep extension. The well-demonstrated superficial healing powers of radium and the röntgen rays should not lead the surgeon to attempt to cure too extensive a lesion with these agents alone, lest the lesion make deep inroads, while valuable time is wasted on superficial

healing.

8. Indications in dermatology. Non-malignant and skin conditions, such as warts, moles, nevi, acquired blemishes, like tattoo marks or keloids, lupus, ureteral caruncles, mycosis fungoides, blastomycosis, and acnes can readily be controlled by X-rays and electric desiccation. If one has the equipment, massive doses of röntgen rays, carbon dioxide snow, and ultraviolet rays may be used in these conditions with advantage. Radium will give good results, provided the radium and time necessary are available. Surgery is contra-indicated for superficial lesions, because better cosmetic results can be obtained with less danger and less pain by non-surgical methods. Psoriasis, eczema, and skin diseases due to faulty metabolism should be treated first by systemic measures, including radium emanation if available. When this does not produce the desired results, electrical methods, such as röntgen rays in divided doses, are indicated. In deeper malignant conditions of the skin the following therapeutic procedure should be adopted:

1. Massive röntgen deep therapy or massive

radium deep therapy.

2. Complete radical operation, preferably by bloodless methods, such as thermopenetration, electrocautery, or massive caustics (Strobel).

3. Fulgeration (de Keating-Hart) into the wound.

4. Post-operative röntgen deep therapy or massive radium deep therapy. In hopeless malignant skin conditions the pa-

tient's symptoms can frequently be much ameliorated by massive deep rontgenotherapy or by radiotherapy.

#### MILITARY SURGERY

Tuffier: Military Surgery (Contribution a l'étude de la chirurgie de guerre). Bull. Acad. de méd., Par., 1914, lxxi, 150. By Surg., Gynec. & Obst.

Tuffier has had experience from the firing line of the Vosges to the hospitals at the rear. He believes that antisepsis is incomparably superior to asepsis, and thinks we should return to the antisepsis of Lucas-Champonnière and to Chassaignac's drainage, and that the French method of preservation of limbs should be adopted. Rifle bullets are least harmful, shrapnel next, and bursting shells worst. As the latter are apt to cause gangrenous septicæmia and tetanus they should be removed at once if possible. Compound fractures of the limbs are more serious the nearer they are to the root of the limb; those of the upper third of the femur are worst. Injuries of the thorax are generally quite benign and rarely require operation.

At the different hospitals Tuffier visited he saw cases with very large exit wounds, which would indicate that the forbidden explosive bullets had been used. Freight trains are used to transport wounded, for they carry twice as many as passenger trains, and as there are about 4,000 men wounded each day it is necessary to transport them as rapidly as possible. He was struck by the excellence of the first dressings and the fracture apparatus improvised at the front. He finds simple wooden splints best.

As the hospitals near the firing line are constantly in danger of being abandoned if there is an advance or captured if there is a retreat, only urgent surgery should be performed there. He had hoped to find that abdominal surgery could be done at these hospitals, but was disappointed. The only thing to do with the abdominal injuries is to place the patients in a sitting position and not give them food till they can be taken to a hospital. Even at the rear, among five abdominal cases operated upon only one lived. He has found that both patients and those caring for them show a tendency to re-dress too frequently; often it would be better to leave the dressings alone. One of the most serious complications of wounds is tetanus, and for this the transportation trains have been blamed. It is possible that a man might contract tetanus from being carried in a car that had been used for horses, but when the patients are placed in the trains their wounds are covered; so that theory is scarcely probable. Tetanus is generally caused by bursting shells carrying earth into the wound, so that its origin is practically always on the battle field, though it does not become manifest until later. Tuffier is convinced that if cultures were made from the surface of wounds, tetanus bacilli would often be found. Antitetanic serum, therefore, should be given on the battle field, even before the first dressing. Other serious complications are septicæmia and gaseous gangrene. The wounds should be treated by scrupulous cleansing, application of hydrogen peroxide, and good drainage; foreign bodies should A. Goss. be removed at once.

Capitan: Injuries of the Thorax by German Bullets
(Quelques observations sur les plaies du thorax par
balles de fusil allemand). Bull. Acad. de mêd.,
Par., 1914, lxxi, 130. By Surg., Gynec. & Obst.

It is generally considered that injuries of the thorax by modern rifle bullets are not very serious if the bullet traverses the thorax without injuring the heart or mediastinum. Capitan has found in his experience in the present war that this is true if the bullet is fired at close range, is moving rapidly, and if it strikes the thorax perpendicularly and does not remain embedded in it. It is not true if it strikes obliquely and if it has lost its speed, as then the lesions are more serious and heal more slowly. The results, of course, are still worse from shrapnel and bursting shells than from rifle bullets.

In the discussion REYNIER called attention to the fact that soldiers with injuries of the lungs should be protected from cold, for if exposed or too much fatigued they are apt to have secondary traumatic penumonia. They should not be given a certificate of recovery and returned to service too soon; it is preferable to send them home on leave of absence to give the blood in the pleura time to absorb and give the lungs an opportunity to cicatrize. A. Goss.

Picqué, L.: Conservation of Limbs in Injuries to the Soft Parts and Fractures of the Diaphysis (De la conservation des membres dans les plaies des parties molles et les fractures diaphysaires).

Bull. Acad. de méd. Par., 1914, lxxi, 156.

By Surg., Gynec. & Obst.

Picqué is an earnest advocate of conservative methods. Formerly amputation was performed in almost all cases of injuries to the limbs, and it was only in the Russo-Japanese war that the value of conservative treatment was first demonstrated. The chief aim of the surgeon at the front should be to protect wounds from infection, for the majority of fresh wounds are aseptic. There should be no digital or instrumental examination of wounds, and they should be immediately covered with a dry, antiseptic dressing. In the hospitals at the rear there are two classes of cases, the septic and the aseptic. In the first class abstention from operation and infrequent dressing give the best results. It is better not to search for bullets. Abstention from operation is best also in cases of moderate infection. Amputation is necessary in few cases except those of total gangrene. A few cases that have been too long at the front or those in which there are very grave nerve lesions may demand amputation. Wounded soldiers are, as a rule, young men without organic defects, who are capable of undergoing a slow but progressive convalescence.

Goebel, W.: Treatment of Gunshot Fractures of the Extremities (Erfahrungen bei der Behandlung von Schussbrüchen der Extremitaten). Beitr. z. klin. Chir., 1914, xci, 373. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author tells of his experience in the Fourth Reserve Hospital at Belgrade. His conception of primary infection differs from that of most authors. By primary infection he means only infection from the bullet, and he classes all others as secondary infection, especially infection from bits of clothing carried in by the bullet. His dictum that infection is practically always secondary is therefore only apparently different from that of the other military

surgeons of the Balkan war.

Operation should not be performed immediately after the coming of the transport; it will do no harm to wait two or three days. Many fractures of the limbs are severely infected. Free opening of the wound generally obviates the necessity for amputation. Many infections subside under plaster casts. These should either be fenestrated or in the form of a bridge cast. Where there is no infection, gunshot fractures are among the most favorable of compound fractures in comparison with civil injuries, because there is less contusion of the soft parts, less displacement of the fragments, and less shortening. Among 10 fractures of the femur there were 6 without shortening and 4 with shortening of 2 to 3.5 cm.

In fractures of the lower limbs Goebel prefers plaster casts; in those of the upper arm, extension. He prefers plaster for transportation in preference to any other method of dressing, because it is a better safeguard against infection. The longer the time of transportation the greater the percentage of infection in all gunshot wounds; but in the long transportation from Prilep, Monastir, and Adrianople the number of infections in gunshot fractures was less than in the earlier shorter transportations, because they were fixed with plaster dressings. However, the location of the entrance and exit wounds must be indicated for the benefit of the hospital surgeon. Franz.

Lotsch, F.: Gunshot Injuries of the Vessels by Pointed Bullets; Their Treatment in Military Surgery (Schussverletzungen der Gefässe durch Spitzgeschoss und ihre kriegschirurgische Behandlung). Beitr. z. klin. Chir., 1914, xci, 175.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Since the introduction of covered bullets, especially pointed bullets, there has been a great increase in the number of blood-vessel injuries, as the body tissues do not yield before the bullets on account of their extraordinary swiftness. These injuries constitute a high percentage of the injuries causing death on the battle-field. However, a great number of the injured escape with their lives and sooner or later present themselves for medical treatment. When the wounds are dressed a great number of blood-vessel injuries escape detection, and sometimes, therefore, especially when the means of transportation are bad, the patients die of secondary hæmorrhage while in transport. Because of the smallness of the entrance and exit wounds, and the manner of displacement of the tissues, especially the muscles, direct communication with the outside is not established; the primary hæmorrhage is so slight that it is not noticed, and an injury to the blood-vessels is not thought of.

All degrees of vessel injuries are observed. Sometimes the bullet opens the vessel sheath, passes between the artery and vein, and injures both to a certain extent. Frequently "silent" hæmotamata develop, that is, those that do not show pulsation or murmur, but after a few days they show the characteristic symptoms and become demonstrable clinically. If the means of transportation are good, silent hæmatomata should be fixed firmly and the patient carried to the field hospital.

With rest and compression many vessel injuries recover without operation. The vessel should be ligated both above and below the injury; this procedure, however, should be avoided as far as possible on the field; if rendered necessary by hæmorrhage it should be done if possible under anæsthesia and

with Esmarch's bandage.

Aneurisms which do not give any decided indications for operation, such as threatening rupture or pressure gangrene, are treated by compression; operation on them should be performed, so far as possible, only in stationary hospitals. Operation consists in the ligation of both the afferent and efferent vessels and the extirpation of the aneurismal sac. Suture of the vessels is very unusual. Simon.

Hübbenet, V. B.: Effect of Pointed Bullets Based on Experimental Data (Über die Wirkung des Spitzgeschosses auf Grund experimenteller Daten). Samml. d. Mitt. d. Ärzte d. Russ. Gesellsch. v. Roten Kreuz, 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

From his experience, Hübbenet does not think that rotation of the pointed bullet occurs very frequently. Bone injuries from pointed bullets are severer than those from oval bullets only at close range. Tangential shots of the skull show many fragments of varying sizes. Unlike Fessler, the author finds rotation of the bullet in penetrating wounds of the skull very seldom. Penetrating wounds of the skull, even in the Balkan war, showed a favorable course. Injuries of the lung by pointed bullets are less severe than injuries by oval bullets, as the destruction of lung tissue is less. In abdominal injuries a factor of importance is whether the bullet strikes an empty or a full intestine. Deformity of the bullets was frequently observed in the Balkan The better the bullets are made the less deformity there is.

The author comes to the following conclusions:

1. The number of wounded will increase in future wars, as the force of the pointed bullet is very great and every soldier can carry more of them because of their light weight.

 The percentage of severe injuries will increase, transverse wounds will be particularly unfavorable,

and the danger of infection will increase.

3. The first effect of the bullets will be more favorable than that of wounds with bullet Model 88. He thinks the effect of the pointed bullet is not slighter than that of an oval bullet of the same caliber, and, because of its ballistic properties, the arming of soldiers with it is advisable. Holbeck.

Goldammer, F.: Experience in Military Surgery in the Greco-Turkish and Greco-Bulgarian War, 1912-1913 (Kriegsärztliche Erfahrungen aus dem griechisch-türkischen und griechischbulgarischen Krieg, 1912-1913). Beitr. z. klim. Chir., 1914, xci, 14. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author gives an interesting review of the military hygiene and sanitary service among the Greeks and Turks. The section on gunshot injuries is of especial value because it establishes a standard for surgical treatment in war. Operation should not be performed on the field. The value of Esmarch's bandages in the hands of stretcher-carriers is questionable. Good surgeons are necessary in the front lines, not to operate, but to see that transportation is properly carried on. Mastisol is not necessary for the first dressing. Tincture of iodine to disinfect the region of the wound is unnecessary—purely

aseptic dressing being indicated.

French dressing packages are impractical because, when opened, the loose compresses fall out on the ground, and because they require too much space. Moreover, the Greeks cannot, of course, read the French directions. Primary infection is the most important; secondary infection is unusual. However, the body can overcome the majority of even the primary infections if sufficient rest is given. A correct judgment as to the real character and frequency of infections can be gained only by one who has worked at the front as well as in the hospitals. The farther toward the front one is the greater the number of infections encountered.

Goldammer does not approve of plaster for the first dressing of fractures, but believes only splints should be used. When stationary treatment is possible, fenestrated plaster casts should be used, or, preferably, extension—the ordinary adhesive plaster extension. When there is no infection, gunshot fractures heal quicker than compound fractures in civil life. In infected fractures there should be as little interference as possible; every fragment should be preserved as long as possible. Pyocyaneus infection is not dangerous, and is best treated with dry

boric acid.

Infection is more frequent in shrapnel and grenade injuries than in injuries from infantry fire. S-bullets oscillate more readily and remain in the wound more frequently. The author has never seen rotation of the bullet in the wound. The effect of S-bullets is about the same as of oval ones; nor is there any difference in regard to the frequency of infection. It is worthy of note that phlegmons from gunshot injuries of the soft parts quickly undergo retrogression under a compression bandage. In infected fractures compression bandage is not possible, because fixation of the fragments by a plaster dressing is more effective in overcoming the infection. In large injuries of the soft parts heliotherapy is valuable; until the patient becomes accustomed to it there is always fever.

There is nothing new reported in regard to injuries of the vessels. It is pointed out that large hæmatomata should never be incised; otherwise, under the bad conditions that prevail in war, there

are severe phlegmons followed by sepsis.

In regard to gunshot wounds of the skull the author agrees with Holbeck that in tangential and segmental shots operation should be performed at once; in shots through the diameter, only rarely. Fractures of the lower jaw should be treated with Schröder-Ernst splints. The prognosis is very bad in gunshot injuries of the spine. Laminectomy is indicated only when there is only an entrance wound or when there are certain signs that exclude complete transverse lesion.

Gunshot wounds of the lung are generally favorable as to life and function, but not always so simple as is generally assumed. The most serious complication is hæmothorax, which should never be punctured. It always causes fever that is very similar to that of empyema. Several illustrative curves are given.

In gunshot wounds of the abdomen conservative treatment is very strongly indicated—27 of 30 cases recovered. Rest is necessary, and 6 to 8 days' abstention from food, with intravenous injection of an adrenalin-salt solution. Röntgen apparatus is of value only in the hospitals; otherwise they are play-

things that injure the patients.

Goldammer's experience includes 746 gunshot injuries—546 of them musketry shots, 159 shrapnel, and 41 grenade injuries. His experience is especially interesting because he has worked at the front as well as in the hospitals, and because he had a great deal of military experience in the Southwest African campaign.

## GYNECOLOGY

#### UTERUS

Maury, J. M.: Cancer of the Uterine Cervix. J. Tenn. St. M. Ass., 1914, vii, 195.

By Surg., Gynec. & Obst.

The author states that of the cases of cancer of the uterine cervix coming to the surgeon, only a small percentage are in the operable stage of the disease. In his own clinic 10 per cent and in Werder's, of Pittsburgh, 35 per cent were in the operable stage. In Austria, where a campaign of education has been carried on, the clinics of Schauta and Wertheim show 52 per cent and 55 per cent respectively of operable cases.

Operative cases, i.e., no recurrence after 5 years,

are reported as follows:

-	o roborcod	 OALO	44 000 0			
	Werder	 		 	46	per cent
	Wertheim					
	Cullen					
	Kelly and					
	Clark				16.66	

These results show what may be done if the surgeon can get hold of these cases early enough and will do the radical operation after the method of Wertheim. Werder's modification of substituting the cautery for the ligature has not been in vogue long enough for a judgment to be rendered of what its results will be in the hands of others.

The whole subject resolves itself into three

phases, viz.:

I. Education of the public.

2. Education of the family physician.

3. Thorough operative procedure by a competent HARVEY B. MATTHEWS. surgeon.

#### Wilson, T.: The Results of Radical Operative Treatment of Cancer of the Uterus. Med. Press & Circ., 1914, xcviii, 302.

By Surg., Gynec. & Obst.

Wilson states that in England the abdominal operation is becoming the routine method of dealing with cancer of the uterus. The reasons for this are:

1. It affords a better oversight of the field of

operation than the vaginal procedure.

2. The vaginal operation requires special skill and technique, which most operators have not developed; hence, the usual procedure—coleotomy is best in such hands.

3. The affected glands cannot be removed by the vaginal route—this is an important point to

The difficulties of estimating justly the curative results of operation for cancer of the uterus are very great because (1) the disease is very uncertain in its course and duration, and (2) the actual "virus of

cancer"-not yet discovered-seems to pass through varying phases of growth and activitynow active and virulent, now dormant and nonvirulent. Again the individual host plays a very important rôle, for it is well known that some patients succumb very much faster than others and there are some who possess a relative immunity against the disease.

Wilson's results are given in the following tables: Cases of cancer of the uterine body seen until

June 30, 1909: Total cases seen.....50 Radical operations.....31 = 62 per cent Deaths following operation . . . 2 = 6.4 per cent Cases free from recurrence for 5 years and upwards.....12 Absolute curability......24 per cent Results of vaginal hysterectomy for cancer of the cervix to June 30, 1909: 52 operations on 288 patients. Average operability, about 18 per cent. Death following operation..... 1 Patients surviving 5 years and upwards.....16 Absolute curability..........5.5 per cent

Results of abdominal hysterectomy for cancer of

the cervix to June 30, 1909:

32 cases in 98 patients. Operable ratio......32.5 per cent Deaths following operation..... 9 Free for 5 years and upwards...... Absolute curability......10.2 per cent

The ratio of operability has steadily increased from 14 per cent prior to 1899 to 36 per cent in 1913. The total number of patients remaining free after 5 years and upwards has increased nearly twofold in the last decade, and the author is of the belief that with our present-day surgical methods it will be possible to achieve an absolute cure in 25 per cent of all cases of cancer of the uterine cervix.

HARVEY B. MATTHEWS.

Dawydoff, G. A.: The Value of Cystoscopy in Determining the Operability of Carcinoma of the Cervix (Die Bedeutung der Cystoskopie zur Bestimmung der Operationsmöglichkeit bei Portiocarcinom). Verhandl. d. l'russ. Krebskong., St. Petersb., 1914.

By Zentralbl, f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

From 120 cases of his own the author concludes that a normal cystoscopic picture is a complete guarantee that there will be no difficulty in freeing the bladder. The severest changes in the bladder are cancerous metastases in the wall of the bladder; œdema; swelling of the trigone, when this is not caused by purely mechanical factors. Von Holst.

Ralls, A. W.: Diagnosis of Fibroid Conditions of the Uterus; the Importance of Early Surgical Interference. South. M. J., 1914, vii, 729. By Surg., Gynec. & Obst.

The author considers "fibroid conditions" rather than "fibroid tumors" of the uterus only, as he desires to include "fibrosis uteri" in the condition under discussion — the etiology, symptoms, and treatment being practically identical.

The chief symptom is bleeding. Usually metrorrhagia and fibroid conditions must be differentiated from sarcoma, carcinoma, polyp, chronic metritis with endometritis, complications of pregnancy, chorio-epithelioma, subinvolution, and ectopic ges-

tation.

The dangers of delay in securing surgical treatment are: (1) a slow and sure debility due to exsanguination; (2) formation of dense adhesions; (3) nervous symptoms arising from impaired assimilation and impaired cell function; and (4) cardiac

changes,

The author reports 5 cases of "fibroid conditions" of the uterus in patients ranging in age from 24 to 35 years. The chief symptom was increased menstrual flow. One of the cases showed cardiac symptoms which cleared after operation; another showed extreme nervousness for two years previous to operation. In another case a fibroid complicated a pregnancy. In the first case the fibroid was buried in adhesions, some of which had involved the ureter; these adhesions were left around the ureter, which broke down and ruptured on the fifteenth day, necessitating a removal of the kidney. EUGENE CARY.

#### Walter, J. C. M.: The Drug Treatment of Dysmenorrhea. Med. Press & Circ., 1914, xcviii, 304. By Surg., Gynec. & Obst.

Walter gives some good suggestions for the drug

treatment of dysmenorrhœa.

First of all, alcohol (hot gin or whiskey) and morphine are freely used—but only under the physician's direction. Phenacetin, in 15 gr. doses, may be given and repeated when necessary. Acetanilid, 4 gr.; soda bicarbonate, 8 gr.; caffeine, 1 gr.; likewise the bromides, the author believes, depress the excretory function and, therefore, he does not use them. Belladonna, 1.5 gr., in a suppository, is quite potent.

Of the organic extracts, thyroid is the best-10 to 15 grains a day being given for from 8 to 10

days preceding the date of menstruation.

External applications are of distinct value. Various solutions of oil of wintergreen, with or without menthol, are suggested. Cocaine applied to the nasal mucous membrane is often very efficacious.

Hot hip baths with mustard and turpentine stupes

are always helpful.

Other drugs that are often helpful are gelsemium, chloral hydrate, apiol, valerian, viburnum prunifolium and, lastly, asafætida. The safety of ergot is questionable. HARVEY B. MATTHEWS.

Shaw, W. F.: The Subdivisions of Chronic Metritis. J. Obst. & Gynæc. Brit. Emp., 1914, xxvi, 73. By Surg., Gynec. & Obst.

The author insists upon the use of the term "chronic metritis" for the clinical entity including a uterus that is symmetrically enlarged and hard. containing no fibromyomata or malignant disease, and which causes hæmorrhage, pain, or leucorrhœa, or a combination of these. He divides these cases

into two groups:

I. Chronic subinvolution, characterized by a regularly enlarged hard uterus with symptoms of hæmorrhage, pain, or leucorrhæa, hæmorrhage being by far the most constant symptom in cases in which one or more pregnancies have preceded.

2. Hypertrophic uteri, characterized by the same clinical symptoms and findings but which have never

been pregnant.

Shaw objects to the term "fibrosis uteri" as applied to the first group and shows from his own specimens that the increase in the size of the uterus is due in very small part to increase in fibrous tissue, to a great extent to increase of elastic tissue, and to the greatest extent to increase in the amount of muscular tissue, this increase being due to imperfect involution. In fifteen of the twenty-five specimens of this group the endometrium was markedly increased in thickness; only nine of them showed evidence of previous inflammatory reaction. The author does not claim that the condition is directly produced by inflammation.

In the second group, of which Shaw reports four specimens, the uterine walls were considerably thickened but the most marked feature was the enormous increase in the thickness of the endometrium. The elastic tissue followed the same arrangement as in the virgin uterus, and there was no increase in the percentage of the fibrous tissue. The blood-vessels were not increased in number or size. The increase in thickness of the uterine wall is here produced by a definite hypertrophy of all its con-

stituents.

The endometrium is primarily at fault in these cases, becoming thickened from some cause unknown. It then acts as a foreign body, thus causing uterine contractions, especially at the menstrual periods, and so brings about a "work hypertrophy.

These two groups can always be distinguished by

the arrangement of the elastic tissue.

Nulliparous and parous uteri can always be distinguished by the arrangement of the elastic tissue also: (1) in a nulliparous uterus the elastic tissue is confined chiefly to the internal elastic lamina of blood-vessels with only very thin fibrils in the media, adventitia, and between the muscle fasciculi of the mesometrium; (2) in a parous uterus some thick strands of elastic tissue can always be found surrounding some of the blood-vessels.

In the subinvoluted form large deposits of elastic tissue are found in the walls and around the blood-CAREY CULBERTSON. vessels.

Lenormant, C., and Petit-Dutaillis, D.: Indications and Results of Bouilly's Operation; High Amputation of the Cervix and Colpectomy in Genital Prolapse (Indications et résultats de l'opération de Bouilly; amputation haute du col et colpectomie dans les prolapsus génitaux). Gynéc., Par., 1914, xviii, 241.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Of the three methods of operation—(1) colporrhaphy and ventrofixation of the uterus; (2) total extirpation and plastic operation on the vagina and perineum; (3) high amputation of the cervix and plastic operation on the vagina and perineum—the latter is described in detail. There is hypertrophy and metritis of the cervix with cystic degeneration, laceration ectropy and erosion, and tapir-like cervix. High amputation of the cervix removes the hypertrophied and infectious parts, decreases the size and weight of the uterus, and indirectly leads to involution of the remaining part of the uterus. The anterior colporrhaphy overcomes the cystocele, and acts favorably on the retroversion of the uterus by traction, while the posterior colporrhaphy overcomes the rectocele, narrows the vagina, closes the vulva, and gives the entire genital tract a firm support. It is well to precede this threefold operation by a curettage, for otherwise the curettage may have to be done afterward to insure complete success.

The operative technique is described in detail. Among 15 cases, fixation of the uterus was necessary in only two. Among complications are mentioned injury of the bladder, and opening of the posterior Douglas' pouch. The latter occurred 4 times in the 15 cases. It does no harm, but care should be taken not to open the rectum. Sometimes hæmostasis is difficult; to avoid the necessity for total extirpation it is well to ligate the uterine vessels. Secondary hæmorrhage and hæmatomata in the cervical stump

may occur and the latter may suppurate.

Among the 15 women treated, 4 were examined afterward, some of them as late as 8 years. In these there were good mechanical and functional results. The recurrences involved only the vagina, not the uterus.

PONFICK.

Jellett, H.: The Relation of Theory and Practice in the Operative treatment of Genital Prolapse. Med. Press & Circ., 1914, cxlix, 239. By Surg., Gynec. & Obst.

The author discusses the structures concerned in genital prolapse and urges the use of more rational operative methods in order to secure lasting repair. The recent tendency to adopt new methods and seek a panacea for all forms and grades of prolapse, without regard to the individual needs of the case, is deplored. Immediate relief is not always based upon an attempt to restore preëxisting normal conditions. The fallacy of various popular operative methods is demonstrated. An accurate knowledge of the normal supports and relations of the pelvic organs is essential to insure permanent results by operative means, since all cases of genital prolapse differ in form or extent and must be studied individ-

ually from an anatomical standpoint. The anatomy of the female pelvis is peculiarly difficult to study in the dissecting room, because of the misleading effect of post-mortem changes and preservative processes. For accurate study the cadaver dissections should be supplemented by observations on the living subject.

The direct supports of the vagina and uterus are

described and classified as follows:

r. Vagina. (1) The converging planes of the levator ani muscle with its investing fascia; (2) the vaginal suspensory ligaments, bands of connective tissue extending from the ischiatic spines inward and downward to the sides of the vagina—these are practically continuous with the uterosacral ligaments; (3) the attachment to the cervix, which in turn is supported by the uterosacral ligaments and

endopelvic fascia.

2. Uterus. (1) Its vaginal attachment, (2) the uterosacral ligaments, (3) different layers of endopelvic fascia, extending laterally and anteriorly. The former are Mackenrodt's, or the cardinal ligaments, underlying the uterine vessels. The latter are the anterior false ligaments of the bladder, investing the urethra and attached to the pubes. Indirectly, the uterus is supported by the general resistance of the pelvic floor, toward which, in its normal position, the uterus presents its area of greatest expanse.

The structures giving direct support may all be identified in the living subject. In particular, the posterior attachments of the uterus and vagina may be palpated by a finger in the rectum while traction is made on various points of the cervix and vagina.

The results of injury upon the supports above noted are described in order, and special stress is laid upon the sequence of events in the development of general prolapse due to puerperal injury. Probably in most cases, after descent of the lower third of the vaginal wall — anterior wall, posterior wall, or both — the vault of the vagina sags downward, because of stretching of the vaginal suspensory liga-The uterus eventually tilts backward, either because of its own weight and general relaxation of the ligaments or because of a traction forward upon the cervix by the relaxed anterior vaginal wall. The uterus, falling into the axis of the vagina, loses its indirect support and its entire weight falls upon the uterosacral ligaments. Fascial tissue is strong but inelastic, and stretches under continuous strain. As a third stage, the middle third of the vagina descends and the prolapse is complete. Occasionally an extensive supravaginal cervical hypertrophy seems to indicate that the vault of the vagina has exerted long-continued traction before the uterus has begun to descend.

Among complications is mentioned cystocele the most common—its cause and its important rôle in the causation of retroversion and descent of the

uterus.

A close study of prolapse shows that the complete stage is a result of an initial fault which alters the

normal distribution of weight on the suspensory mechanism. The initial fault and subsequent happenings must be studied before repair is attempted so that descent will not recur as a result of leaving one weak point. Ventral fixation failed because the cervix was still in position to descend into the vagina. Extensive plastic vaginal operations failed because the wedge-shaped uterus was still capable of dilating the vagina. Hysterectomy also was unsuccessful, since the vaginal vault frequently prolapsed afterward.

A rational operation for prolapse consists of three parts: (1) the restoration of the direct supports of the uterus and vagina so far as possible; (2) the placing of the uterus in such a position that it offers the maximum resistance to descent; (3) the removal of complications and associated conditions, the result

of prolapse.

Four important structures of direct support to the uterus and vagina require attention: viz., (1) uterosacral ligaments, (2) endopelvic fascia, (3) suspensory ligaments of the vagina, (4) levator ani

muscle.

Shortening of the uterosacral ligaments may be done by Wertheim's abdominal operation or by the author's method per vaginam. Wertheim's interposition operation, mentioned below, especially calls for this when the uterus is small. The author is not convinced that Mackenrodt's ligaments have much supporting value, but, where they may be shortened, the procedure should help support the cervix. Care should be taken not to kink the ureters, which lie in this region. These are moderately shortened by supravaginal amputation of the cervix. The vaginal suspensory ligaments are important and should be shortened, but no practical method has been devised because of their inaccessibility. Bishop's method of internal suture of the vaginal vault is not justified because of the necessity of opening the peritoneum. Restoration of the levator ani muscle is easy and essential. The normal anteverted position of the uterus may be restored by shortening of the round ligaments or by ventral suspension in childbearing women. Wertheim's interposition operation is the most valuable in cases past the menopause or in which there is no obstacle to the production of artificial sterility. The uterus is brought forward and fixed between the bladder and vagina, thereby supporting these organs as well. Brief mention is made of the various complications of genital prolapse and methods of their removal suggested.

S. B. TRYON.

Novak, E.: The Surgical Treatment of Complete Prolapse of the Uterus. Surg., Gynec. & Obst., 1914, xix, 412. By Surg., Gynec. & Obst.

The Watkins-Schauta "interposition" operation was performed in 26 cases of complete prolapse. With one exception the results were excellent. The one unsatisfactory result was in a case of fifteen years' duration, with enormous outlet and attenuation of the levator ani.

The two principal factors which govern the choice of operation for complete prolapse are, on the one hand, the desire of the patient to get permanently well, and on the other, the desire for more children. The Watkins-Schauta procedure, combined with sterilization, is indicated even in the case of the child-bearing woman with extensive prolapse, who has had a number of children, and whose sole desire is to get well, irrespective of the possibility of future pregnancies. Unless the uterus is very small and atrophic, so that it offers no support to the bladder. or unless there is a suspicion of malignancy, it is better to retain it. When hysterectomy is deemed advisable, good results are obtained by the operation advocated by Goffe. The cervix should be amputated only when long and hypertrophic, or when it is the seat of ulceration. A properly performed perineorrhaphy is essential to the success of the "interposition" operation.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Solowjew, T. A.: Relation of the Abderhalden Reaction to the Secretion of the Ovary (Zur Frage der Beziehungen der Abderhaldenschen Reaktion zur Sekretion des Ovariums). Zentralbl. f. Gynäk., 1914, xxxviii, 622.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author had positive results with the Abderhalden reaction in all cases of known pregnancy; but in cases of gynecological disease and in perfectly normal women the reaction was sometimes positive and sometimes negative. The experiments showed, too, that there was a difference in the reaction with the serum of men and that of non-pregnant women. The author assumes that this is due to the fact that in sexually mature women the ovary has an effect on the fermentative activity of the serum.

Bruno Wolff.

Jakobson, W. L.: Condition of the Ovaries after Removal of the Uterus (Das Verhalten der Ovarien nach Entfernung des Uterus). J. akush. i jensk. boliez., St. Petersb., 1914, xxix, 709

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Microscopic examination of the ovaries of two dogs, three and three and one-half years after extirpation of the uterus showed contraction of the cortical layer, normal primordial follicles, all transition stages to graäfian follicles, and well developed corpora lutea. The number of primordial follicles as compared with the normal was apparently decreased, and there were also many atresic forms. These phenomena, as well as a marked development of connective tissue in the cortical layer, indicated trophic disturbances.

Goldspohn, A.: Resection of Ovaries. Tr. Am. Ass. Obst. & Gynec., Buffalo, 1914, Sept.

By Surg., Gynec. & Obst.

The theoretical objection to this procedure that all cystic or hydropic graafian follicles contain nor-

mal ova is unanimously voted down by all recorded histological and clinical observers except two. The practical objection that it is useless to remove such cystic follicles because they will continue to re-form, is shown to be without foundation when the cause of this degeneration — descensus or prolapse of the ovaries — is corrected efficiently when the resection is made. This fact is demonstrated by the actual results achieved by a number of operators cited and

by the author's own results.

Under the head of pathological liabilities of the follicle cysts and persistent corpora lutea referred to, the literature of the last decade shows that they are not infrequently the source of pelvic hæmatoceles which, before operation, are diagnosed as cases of extra-uterine pregnancy. The latter has wrongly been regarded by many, if not most, surgeons as the sole cause of these bleedings, especially since Saenger called attention to the frequency of tubal abortions. Very large ovaries with this follicular degeneration are found to be prevalent in patients bearing the stigmata of the status thymolymphaticus; and in a number of carefully observed cases of uncontrollable and dangerous uterine bleeding in girls and sterile young women the ovaries have all been affected with this degeneration.

After citing the opinions, practice, and results of numerous operators with resection of ovaries, the author reports his own cases, in each of which resection of one or both ovaries was performed as an adjunct to some more formidable operation—usually for uterine displacement, diseased tubes, or neoplasms. He regards descensus and prolapse of the ovary as the chief cause of this condition, and holds that a severely aseptic technique, the use of fine plain catgut only, and the elevation of the ovary with the uterus, even out of the small pelvis, are essential to success; and therefore his cases were examined (1) for position and (2) for condition of the resected ovaries.

Out of 151 cases, Goldspohn and two colleagues subsequently examined 68; of these, 55 were found to be cured and 12 relieved, and one case with fairly local findings was classed as a failure because of a persistent and growing mental abnormality. In 25 other cases detailed information as to pelvic and general health and business capacity was obtained from answers to an extensive question-sheet; and of these, 19 could be counted as cured, 5 as relieved, and one as a failure; but in no case did a previously resected ovary call for surgical treatment again.

Burdsinsky, T. A.: Surgical Treatment of Inflammatory Diseases of the Adnexa (Die Chirurgische Behandlung entzündlicher Adnexerkrankungen).

J. akush. i jensk. boliez., St. Petersb., 1914, xxix, 747.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author had 308 cases; 193 of them suppurative and 115 non-suppurative. The complications were: appendicitis in 10 cases, myoma of the uterus in 9, pregnancy in 2, perforation of the bladder in 1, perforation of the intestine in 2, miliary tubercular

peritonitis in 5. About 50 per cent of the cases were of septic origin. Gonorrhœa and tuberculosis were second and third in importance, each about 5 per cent. Both acute and chronic cases were operated on. Absolute indications are danger of perforation and presence of fistulæ, with severe disturbance in the general condition. A relative indication is failure of conservative treatment, carried out on an average of from one to two weeks. Laparotomy was performed in 227 cases, 37 of them being radical operations. The mortality was 1.7 per cent-1.4 in suppurative and 2.2 per cent in non-suppurative conditions. Among 135 cases of "suppurative" laparotomies pus was discharged into the abdominal cavity in 67. None of these patients died. Nineteen and two-tenths per cent of the cases had fever. There were 81 vaginal operations, 9 of them radical operations and 29 incisions. The latter showed a mortality of 10.3 per cent. Excluding the cases treated by incision, the vaginal cases showed a mortality of 1.9 per cent.

#### EXTERNAL GENITALIA

Schubert: Construction of a Vagina by Implantation of the Rectum (Über den Ersatz der fehlenden Scheide durch Implantatio recti). Ztschr. f. Geburtsh. u. Gynäk, 1914, lxxvi, 268.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author points out the necessity of making a vagina for certain women. Krafft-Ebing and Mori cite cases of women who have committed suicide because of the impossibility of cohabiting. In contrast with Strassmann's technique, the author does not make any cuff above the anus, in order not to draw the rectum down so far. The opening of the peritoneum is thus avoided and the formation of a fistula prevented. Nine operations have been performed by the method, four of them by the author himself. There is the possibility of hæmatometra or hæmatocolpos being discharged through the newly formed vagina, but no case has thus far been reported. It is also possible that the patient may by this treatment be rendered capable of conception.

Strassmann, P.: Construction of a Vagina by Implantation of the Rectum (Über den Ersatz der fehlenden Scheide durch Implantatio recti). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 257. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Fourteen cases of construction of a vagina from small intestine or rectum have been reported in the literature. The author describes a new case by Schubert's method. The technique consists of stretching the anus; excision of the skin in the region of the hymen; then through the wound the anterior wall of the rectum is dissected with blunt instruments. The rectum is incised 3 cm. above the anus and is drawn into the entrance wound and sutured circularly. The coccyx is resected with the patient in the right lateral position. The pelvic

fascia is separated; the rectum is dissected with the hand as far as the promontory and is then incised transversely with scissors. The pelvic end, which is to form the vault of the vagina, is sutured with catgut, and the oral end is drawn through the sphincter ani. The mucous membrane is sutured to the inner edge of the anus and the skin incision is closed except for a gauze wick. The new vagina and rectum are tamponed with gauze and an opium suppository inserted. Three months after the operation cohabitation without pain is possible. The author points out the advantages of a rectal vagina over one made from small intestine.

HIRSCH.

Stern, R.: Adenoma Hidradenoides Vulvæ (Adenoma hidradenoides vulvæ). *Monatschr. f. Geburtsh.* u. Gynäk., 1914, xxxix, 707.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author gives a histological description of a nodule as large as a cherry that was removed from the left labium majus. It consisted of glandular tubes lying close to one another with a slight connective tissue stroma. The glands were lined with very regular cylindrical epithelium. Connection with the surface epithelium or with a skin gland could not be demonstrated in serial sections, but there seemed to be a connection with a malformed sweat gland. The tumor at any rate showed the histological characteristics of a sweat gland.

RUHEMANN.

Jellett, H.: The Suture of the Levator Ani Muscle in Perineorrhaphy Operations. Surg., Gynec. & Obst., 1914, xix, 346. By Surg., Gynec. & Obst.

Jellett calls attention to the fact that in all the old perineorrhaphy operations the suture of the levator muscle was neglected, and he thinks that many modern gynecologists neglect muscle suture also, because they have been led to believe that the operation was difficult and complicated. Krönig and Martin, of Bumm's clinic, he thinks are especially responsible for this belief. Krönig believed that the deep transversus perinei muscle could easily be mistaken for the levator ani muscle, and that the former was frequently sutured instead of the latter, while both writers considered that the suture of the levator involved a deep and extensive dissection.

Jellett points out how impossible it is for the deep transversus perinei to be found as a definite structure in a multipara with a torn perineum, and how equally impossible it is that such a fragmentary muscle could yield any support, as Krönig seemed to suggest. He then discusses the position of the levator muscle, and points out the means by which it can be identified positively. He further states that in 346 operations for chronic perineal laceration at the Rotunda Hospital, the levator ani was sutured in practically every case. He does not claim any special originality for the operation which he describes, but he considers that it offers an effective answer to those who insist that suture of the muscle is difficult and

dangerous. The essential features of the operation are as follows:

- 1. The careful removal of the necessary amount of vaginal mucous membrane from the rectum.
- 2. The exposure and suture of the separated levator ani muscle.

3. The careful approximation of the cut edges of the vaginal mucous membrane in such a manner as

to leave no projection or redundancy.

A detailed description of the operation is given, at the close of which attention is called to the necessity of firmly plugging the vagina in order to prevent the collection of blood in any dead spaces between the levator muscle and the vaginal mucous membrane. The operation he describes was usually performed in less than ten minutes, and very rarely took more than fifteen minutes. The advantages of positive suture are so obvious as to require no further mention, but to emphasize them he shows four diagrams which he made from two cases of perineorrhaphy. In one of these cases the muscle had not been sutured, in the other the muscle had. In both, the external appearance was identical, but otherwise the operation in which the muscle had not been sutured failed altogether to produce a sufficient vaginal support. His conclusions are as follows:

1. Routine suture of the levator muscle is an

essential part of perineorrhaphy.

2. Routine suture is always practicable except when the muscle is wanting owing to atrophy after injury.

3. The exposure and suture of the levator muscle

is neither difficult nor dangerous.

#### MISCELLANEOUS

Runge, E. von, Veit, J., Franqué, O. von, and Others: Value of Radiotherapy in Gynecology (Umfrage über die Bedeutung der Strahlentherapie für die Gynäkologie). *Med. Klin.*, Berl., 1914, x, 19, 59, 192.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In radiotherapy of uterine disease röntgen rays are almost exclusively used, although radium and mesothorium have given good results in some cases, but with the latter treatment hæmorrhage readily reappears. Cases that do not show any pathological histological changes are best suited for radiotherapy.

Radiotherapy should be used instead of total extirpation when there is menorrhagia that cannot be stopped in any other way and when malignant disease can be excluded with certainty. In young women the fact must be taken into consideration that conception will probably not occur, and if it does the proper development of the fœtus will be prevented by the injuries to the ovaries. Curettage and microscopic examination of the fragments should be made in order to avoid overlooking a carcinoma of the body of the uterus. The symptoms of the menopause are mild.

In radiotherapy of myomata röntgen rays are also used almost exclusively; in nulliparæ intravaginal and especially intra-uterine treatment should not be used. In the use of radium and mesothorium care should be taken to avoid irritation of the peritoneum and exudates. It must be admitted that amenorrhœa is sometimes attained more quickly with mesothorium than with röntgen rays, but there is no decrease in the size of the myoma. Indications for röntgen treatment are intramural and submucous myomata, if malignancy can be excluded with certainty. As a result of the treatment, amenorrhœa and contraction of the myoma sometimes completely disappear. Some cases, however, remain unchanged. The cures average 80 per cent, and there are seldom any injurious by-effects. The contra-indications are: myoma with symptoms of incarcerat on, pressure-symptoms with necrosis or suppuration—in other words, complications that of themselves demand operation, or when the patient must resume work quickly. Sometimes if radiotherapy is ineffective operation still has to be performed.

In inoperable cases of carcinoma of the female genitalia, especially the uterus, radiotherapy brings about improvement in the general condition, lessening of the pain and sleeplessness, and increase in weight. Hæmorrhage and secretion disappear, the crater sometimes closes, and in place of the carcinoma sound tissue appears covered with normal epithelium. Metastases sometimes show retrogression, but never entirely disappear. In radiotherapy care must be taken to avoid too large doses, as they sometimes make the general condition worse. In operable cases, if the surgeon feels sure that operation will be effective, it should be performed; otherwise intense radiotherapy should be used, and this also in cases where other diseases prohibit operation. Primary carcinomata generally react better than recurrences. In recurrence the earlier the patient is treated the better the prospects. After operations for recurrence, prophylactic radiotherapy is earnestly recommended, and it should be carried out for a long time with tolerably large doses.

The best treatment is a combination of röntgen rays with radium or mesothorium. The average total dose is 40 to 100 full doses of röntgen rays and about 6,000 to 10,000 milligram-hours every two weeks.

The best filter for röntgen rays is 3 mm. aluminum; for mesothorium or radium, 0.2 mm. silver tubes and 3 to 4 mm. lead filter, nickelplated copper case and a lead filter covered with aluminum and rubber.

IMMELMANN.

Keil, G.: Technique of Mesothorium Treatment in Gynecological Cases (Technik der Mesothoriumbehandlung bei gynäkologischen Fällen). München. med. Wchnschr., 1914, lxi, 1108. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author gives a review of the cases of gynecological carcinoma treated with mesothorium by Prof. Klein of Munich. He treats carcinoma by a

combined method: (1) repeated moderate doses of mesothorium, not less than 50 mg, and generally not over 100 mg.; (2) simultaneously, intravenous infusions of enzytol, radium barium selenate, colloidal metals, etc.; (3) in the intervals between two series of mesothorium treatments, röntgen treat-

The technique consists of a series of three or four irradiations at intervals of three or four days. Intervals of one to two weeks intravene between series; after improvement begins there are intervals of four to six weeks and even longer; in the intervals röntgen treatment is administered. In the first treatments  $\beta$ -,  $\gamma$ -, and secondary rays are all used: in the later series only  $\beta$ - and  $\gamma$ -rays, or only pure y-rays. Cases of recurrence in the scar are treated very carefully on account of the nearness of the ureters. Recently Keil has been using only brass filters, since there are very few secondary rays.

The time the capsule is left in place varies, but as a rule it is left about 10 to 18 hours, in small tumors 6 to 8 hours, in recurrences in the scar only The blood and urine are examined I to 2 hours. before and after irradiation. In one case of carcinoma of the tongue the sugar in the urine disappeared permanently after mesothorium treatment. Among 40 gynecological cases, in 11 there were no clinical signs of carcinoma after the treatment. In one case of metastasis of chorio-epithelioma mesothorium treatment had astonishing results. Three cases, that had been regarded beforehand as hopeless, died. The remainder are still under treatment. Improvement has been noted in almost all of them. HIRSCH.

Peterkin, G. S.: A New Method of Diagnosis to be **Employed to Elucidate Pathological Conditions** of the Female Genito-Urinary Organs. Urol. of the Female Control of the Female Court, 1914, xviii, 455.

By Surg., Gynec. & Obst.

The author presents a method of genito-urinary diagnosis in women, consisting of a series of X-ray plates of the pelvis taken after the insertion of a special metal cervical pessary. Ureteral catheters and bladder instillation with silver-iodide are used in conjunction with this pessary to demonstrate the relative position of the pelvic organs. The idea was suggested by the author's experience in cases of frequent and painful urination without urinary changes, which symptoms he considers referable to a dragging of the uterus and cystocele upon the ureters and kidneys. The object was to gauge and demonstrate accurately the position of the cervix in the pelvis and its relation to other organs, to verify his theory, to secure aid in the diagnosis and treatment of other malpositions of the pelvic organs. If the situation and mobility of the uterine cervix could be accurately determined, the effect of various positions of the uterus on the bladder and kidneys and also the result of extra abdominal pressure on the urinary and other pelvic organs would become a matter of knowledge.

After experimenting with various shaped pessaries, Peterkin adopted a square base having one rounded corner and a circular aperture in another corner. By inserting this in a constant position in the cervix he is able to determine the degree of anteroposterior tilting of the cervix by the appearance of the X-ray shadow. The angle of the shank with the median line shows the lateral deviation of the cervix. He is still endeavoring to devise a shank suitable for all cervices.

He presents the records of six cases which show special features and demonstrate the applicability of the idea to the diagnosis and treatment of pelvic disorders. The pictures are taken in three positions—standing, dorsoprone, and 14° Trendelenburg position—to determine the mobility of the uterus, with and without corsets; also with the bladder empty and filled with silver-iodide. One picture is taken with only sufficient silver-iodide in the bladder to show the size of the cystocele. He has made plates after applying various abdominal supports in order to determine the best form for palliative or post-operative treatment.

By the author's method of observation these points have been or may be demonstrated: (1) amount of displacement of bladder as well as uterus; (2) degree of mobility of uterus, presence or absence of adhesions; (3) effect of corsets on pelvic organs and the style of appliance most suited to proper support; (4) by a series of observations the form of operation giving most permanent results; and (5) the necessity of pre-operative and post-operative treatment to insure best results.

S. B. TRYON.

Hoffmann, C. A.: Lichen Sclerosis of the Female Genitalia (Über Lichen sclerosus der weiblichen Genitalien). *Dermat. Ztschr.*, 1914, xxi, 473. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author reports two cases. In the first there were small spots varying in size from that of the head of a pin to that of a hempseed; some of them were solitary, some of them confluent, They were white with a pearly sheen and had brownish or bluish edges, and were located on the flexor side of the forearm and under the breasts. cences in the inguinal region and on the labia majora looked a little different. In the latter there were white raised plaques as large as a penny, their mosaic-like surfaces being studded with horny plugs. The inner side of the labia majora and the contracted labia minora felt dry and like sandpaper. There were some erosions that were very painful. In the mouth there was also a slightly reddened focus, as large as a penny, with fine stripes. Röntgen treatment had a good effect subjectively. In the second case the efflorescences were present only on the vulva. The histological specimen showed the

typical picture of lichen sclerosis: viz., changes in the connective tissue, disappearance of the papillary bodies, round-cell infiltration, gaps at the boundary between the corium and epidermis.

Lichen sclerosis of the vulva is apparently not a very rare affection. There is a marked similarity between the clinical and histological picture of lichen sclerosis of the vulva and that of craurosis of the vulva.

Benthin.

Fischel, A.: Normal Anatomy and Physiology of the Female Genital Organs of Mus Decumanus, and the Experimental Production of Hydroand Pyosalpinx (Zur normalen Anatomie und Physiologie der weiblichen Geschlechtsorgane von Mus decumanus, sowie über die experimentelle Erzeugung von Hydro- und Pyosalpinx). Arch. f. Entwicklingsmechn. d. Organ., 1914, xxxix, 578.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The contractions of the smooth muscle fibers in the mesentery of the tube in Mus decumanus tend to draw the ovarian capsule and the mesentery together and increase the pressure of the fluid in the periovarian space, and in this way the ovum that is in this space is forced toward the open mouth of the tube. Contraction and relaxation of the infundibular muscle of the tube cause alternate contraction and dilatation of the infundibulum, which produces suction on the contents of the periovarian space. The greater part of the tube has non-ciliated epithelium; the musculature of the tube plays the chief part in the onward movement of the ovum. By making a transverse incision through the abdominal part of the sexual tract, Fischel produced phenomena similar to those of hydrosalpinx in the human being, and by the addition of infection this could be changed to pyosalpinx. WEISHAUPT.

Landsberg, E.: Two Proposed Remedies for Gynecological Practice: Calcium for Inflammatory Processes and Extract of True Corpus Luteum for Hæmorrhage (Zwei therapeutische Vorschläge für die gynäkologische Praxis: Calcium gegen entzündliche Prozesse, Extrakt aus Corpora lutea vera gegen Blutungen). Therap. Monatsh., 1914, xxviii, 345.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Landsberg has used calcium subcutaneously, in the form of a one per cent solution of calcium lactate. Of 18 cases only two had to be operated upon, while in the others improvement or cure was attained. Generally, however, old conservative methods of treatment were not abandoned. For hæmorrhage, especially during puberty, he has injected subcutaneously an extract of true corpus luteum that was prepared for him by Hoffmann-La Roche. The favorable effect that is to be assumed on theoretical grounds appeared promptly in 8 cases. BAUER.

## **OBSTETRICS**

#### PREGNANCY AND ITS COMPLICATIONS

Eman, F. T. Van: Placenta Prævia. J. Mo. St. M. Ass., 1914, xi, 118. By Surg., Gynec. & Obst.

Van Eman discusses the symptoms, differential diagnosis, and treatment, as well as the theories advanced as to the probable cause of placenta prævia, and quotes statistics showing the relative

mortality of mother and child.

The relative merits of the various forms of treatment are discussed at length, especial attention being paid to cæsarean section, the author favoring the latter. The opinions of various American obstetricians are quoted, most of whom prefer cæsarean section under favorable conditions.

The author reports two cases successfully terminated, the one by manual dilatation and extraction, the other by cæsarean section, and arrives at the

following conclusions:

Placenta prævia of any type is pathologic.
 The mother's life is of first importance.

3. Placenta prævia positively diagnosed at any time up to the end of the seventh calendar month calls for the immediate termination of pregnancy. If the child is viable, abdominal section may be the method of choice.

4. Bleeding having been slight, the patient being at or near term, with any type of placenta prævia, delivery may be made by the method best handled by the accoucheur—Braxton-Hicks, metreurysis, or,

preferably, cæsarean section.

5. In the central type, at or near term, abdominal cæsarean section is the safest for both mother and child, providing the possibility of infection is at the minimum, the environments suitable, and the mother's condition justifies the operation.

REINHARD E. WOBUS.

Rouffart, E.: Treatment of Extra-Uterine Pregnancy (Quelques considérations sur le traitement de la grossesse extra-utérine). Gaz. de gynéc., 1914, xxix, 161.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The appearance of sudden, severe hæmorrhage is an indication for immediate operation; interval hæmorrhage indicates laparotomy; doubtful diagnosis, puncture of Douglas' pouch. In hæmatoma of Douglas' pouch operation should not be performed too soon; rest in bed, ice bags, and morphine should be tried first. After the disappearance of symptoms of peritonitis, the treatment should consist of hot compresses, vaginal douches, and salt baths. The reappearance of hæmorrhage or failure to absorb is an indication for laparotomy with vaginal drainage. In exceptional cases hysterectomy for the pur-

pose of drainage may become necessary. In septic or suppurative injection of the hæmatocele, treatment as in pelvic abscess by colpotomy should be adopted, or later, in the afebrile stage, laparotomy should be done to overcome symptoms that still persist.

In extra-uterine pregnancy the uterus is slightly increased in size, with a soft, painless tumor in the region of the tube, not sharply circumscribed. Often there is colostrum in the breasts and cyanosis of the vagina. Menstruation may cease or be slight in amount, but sometimes it is profuse. Often the

patient complains of a dull pain.

In interstitial pregnancy resection or extirpation of the uterus is generally necessary. In advanced or full-term extra-uterine pregnancy with a living child, laparotomy should be done and as thorough removal as possible of the membranes, the wall of the tube, and the placenta. The latter is generally impossible on account of the insertion of the placenta into abdominal organs, for instance the intestine. Tamponing should be done after the operation. If the child is dead, operation should not be performed until after the involution of the vessels of the placenta; later, there should be mummification or lithopedion extirpation of the encapsulated fœtus as in dermoid. In suppuration of the amniotic sac, fistulæ are generally formed. Dilatation of the fistulæ should be followed by laparotomy to remove the parts that hinder closure of the fistulæ.

HIRSCH.

Köhler, R.: Ovarian Pregnancy (Graviditas ovarialis). Gynäk. Rundschau, 1914, viii, 275.
By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Laparotomy was performed on a 43-year-old patient because of a suspected ruptured tubal pregnancy. In the abdominal cavity much liquid and clotted blood was found, but both tubes were normal. The fimbriæ were free, the left ovary normal, the right ovary enlarged, and at its median pole there was a bluish shimmering cyst as large as a dove's egg. The removal of the right adnexa was followed by recovery. Histological examination of the specimen showed that there was an undoubted follicular pregnancy. The embryo was not found but villi were. The demonstration of lutein cells in the wall of the cyst and its intimate contact with the ovum confirmed the conclusions that the ovum had been implanted in the follicle and that the development of the corpus luteum and of the ovum had proceeded simultaneously. There were no proofs of a direct implantation of the ovum in the wall of the follicle, but it seemed more probable that the impregnated ovum had become implanted in the blood

of the ruptured follicle. The causes of implantation of the ovum in the follicle are discussed. In this case there were none of the factors present that are given by most authors as causative of ovarian pregnancy, such as infantilism; abnormal length, shortness, or coiling of the tube; or inflammatory EISENBACH. changes.

Verdelli, G.: Repeated Cæsarean Section (Per il taglio cesareo ripetuto). Rassegna d'ostet. e ginec., 1914, xxiii, 83, 160, 201.

By Zentralbl. f. d. ges. Gynäk, u. Geburtsh. s. d. Grenzgeb.

The author collected 8 cases in which cæsarean section was repeated on account of rachitic pelvis. He used silk and sutured the uterus in two layers and the abdominal wall in three layers. The pregnancies following cæsarean section progressed well. On the succeeding laparotomy he found adhesions in six cases, once with the intestine, once with the abdominal wall, and four times with the omentum. In one case in which cæsarean section had been performed four times there were no adhesions. The uterine scar was always in good condition, and no thinning of the wall of the uterus was observed. The results were always good; there were no hernias. Two of the children, one of which was a twin, died of asphyxia. The children of the second and succeeding pregnancies were of good weight, some of them weighing more than the first child.

The dangers and ill-effects of the repetition of laparotomy are discussed. The prognosis is not bad either in regard to capacity for work or to disturbances of the genital tract. Abortion cannot be attributed to a preceding cæsarean section. Abortion after cæsarean section should be attributed to the usual causes. Cæsarean section should always be performed at the beginning of labor; in infected cases the extraperitoneal method should be chosen.

Shands, H. R.: Cæsarean Section in Eclampsia. nds, H. K.: Gazaria, 727.

South. M. J., 1914, vii, 727.

By Surg., Gynec. & Obst.

After reviewing the literature on eclampsia, the author cites two or three theories or modes of treatment and is inclined to believe with the American school that rapid emptying of the uterus with the least trauma is best for both mother and child.

Stroganoff has recently reported 400 cases of eclampsia with a maternal mortality of 6.6 per cent, under the conservative treatment of chloroform, chloral, morphine, dark room, and quietude. Lichtenstein had 60 consecutive cases with no deaths; this he attributes to blood-letting plus the Stroganoff treatment. Peterson of the American school empties the uterus as quickly as possible.

The author reports two cases in which he performed cæsarean section for eclampsia, one under general anæsthesia and the other under local. Both mothers and children recovered nicely. In these cases the cervix was intact and not dilated, and the vagina was not infected. Eugene Cary.

Ricketts, B. M.: Suprapubic Cæsarean Section for Puerperal Eclampsia. Am. J. Surg., 1914, xxviii, By Surg., Gynec. & Obst.

Ricketts reviews the literature of cæsarean section for eclampsia and gives statistics as to when it was done, by whom it was done, and the results of a great number of cases.

He quotes statistics compiled by Peterson showing

the mortality as follows:

In 480 cases of eclampsia treated by abdominal cæsarean section, the maternal mortality before the aseptic era was 36.9 per cent, and in 317 of this number since 1900 the mortality has been reduced to 31 per cent. In 245 cases without infection the mortality was but 24 per cent; in 317 cases since 1000 the fœtal mortality has been 5.5 per cent; in 132 cases where the sections were performed after one to five eclampsia convulsions, 3.7 per cent. The report shows that the severity of successful and unsuccessful cases operated on has been greater than those treated medicinally up to this date. Peterson's final conclusions are that the operative procedure should be selected which will empty the uterus the quickest with minimum trauma and shock to the eclamptic mother and child.

The fœtal mortality, generally, has been from 44 to 54 per cent, but this high per cent has been reduced to about 25 per cent. This would of itself indicate that the mortality of each may be reduced

by early operation.

The author reports a number of cases, and concludes by outlining the history of the pre-operative and post-operative treatment of eclampsia.

A. C. STOKES.

Hallmann: Post-Mortem Cæsarean Section (Über die Sectio cæsarea post mortem). Festschr. f. Pobedinsky, Moscow, 1914. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The following is the substance of the author's conclusions: Post-mortem cæsarean section gives 61.27 to 65.03 per cent living children. The prognosis is better for the child in sudden, rapid, and violent death, diseases of the central nervous system, of the heart and kidneys, than after long-continued or infectious diseases, diseases of the blood, or intoxications in which the blood is altered. The outcome is favorable for the child only if the operation is undertaken within 15 or 20 minutes after death. In private practice the consent of the dying patient or the relatives must be obtained.

Cæsarean section just before death gives favorable results, and may be performed in cases where it is certain that the child is living and that the mother is about to die. A consultation is advisable on account of the possibility of mistaken diagnosis. The operation may be performed from the seventh to the tenth month of pregnancy, or even earlier if the history is defective. In conclusion, the author gives a tabulated review of 68 cases from the liter-JENTTER. ature.

Devèze, L.: A Case of Post-Mortem Cæsarean Section with a Living Child (Un cas de césarienne post-mortem; enfant vivant). Bull. Soc. d'obst. et de gynéc. de Par., 1914, iii, 325.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Cæsarean section was performed on a patient who had died of tuberculosis of the larvnx ten minutes before. The child was very deeply asphyxiated but was restored. The author points out the three important points in the technique: (1) quickness of operation, (2) strict asepsis, and (3) long-continued attempts at resuscitation of asphyxiated children.

In the discussion, attention was called to the lack of legal decisions in regard to cæsarean section on the dead, in contrast with the Roman law.

Kreiss, P.: Tetanoid Symptoms in Pregnancy and the Puerperium (Tetanoide Symptome bei Schwangeren und Wochnerinnen.) Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 1.

By Zentralbl, f. d. ges. Gynäk, u. Geburtsh, s. d. Grenzgeb.

The mechanical and galvanic irritability of the facial nerve was tested in 50 pregnant women and 75 women in the puerperium. There were tetanoid symptoms in 60 per cent of the pregnant cases, and

in 50 per cent of all the puerperal cases.

The appearance of tetanoid symptoms in pregnancy and the puerperium is due to hypofunction of the epithelial bodies, which in turn is to be attributed to a deficiency of calcium in the organism on account of the increased demand for it in pregnancy and the puerperium. The best proof of this hypothesis is the therapeutic effect of the administration of large doses of calcium chlorate in manifest tetany, with its brilliant results. SIEBER.

Henderson, D. K.: Korsakow's Psychosis Occurring During Pregnancy. Bull. Johns Hopkins Hosp., 1914, xxv, 261. By Surg., Gynec. & Obst.

Korsakow's syndrome consists of poor power of retention for recent events, disorientation for time and place, misidentifications, and confabulations. This psychosis may develop during pregnancy and may or may not be associated with polyneuritis.

Henderson reports two cases of his own, reviews other case reports, and reaches these conclusions:

1. The pregnant state must in certain cases be recognized as an important etiological factor in the production of peripheral neuritis, and of that condition known as Korsakow's syndrome.

2. The neuritis caused may be either (1) general, e.g., affecting all the limbs, or (2) local, affecting

certain of the cranial nerves.

3. The mental disorder characteristic of the condition is usually associated with a general polyneuritis, but, as evidenced by one case reported, it may occur alone.

4. The frequent history of hyperemesis gravidarum in association with the generalized forms of the disorder is so striking that it suggests a possible line of approach as to the elucidation of the nature of the toxin.

5. Those patients who in previous pregnancies have suffered from severe vomiting, or other serious toxic phenomena, should be strongly urged to avoid WM. H. CARY. any further pregnancies.

Spies, T.: Pernicious Vomiting of Pregnancy, and Serum Therapy (Vomissements graves de la grossesse et sérothérapie). Clinique, Brux., 1914, xxviii, 337. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Pernicious vomiting of pregnancy is an intoxication which is comparable to the dermatoses of pregnancy. Like the latter it frequently cannot be cured by ordinary medication, and sometimes nothing except the interruption of the pregnancy cures the trouble. Some authors have tried the administration of adrenalin, assuming that it was due to adrenal insufficiency. Good results have been obtained recently by serum from pregnant patients or by horse serum.

The author describes the case of a 20-year-old II-para, in which vomiting could not be controlled and artificial abortion was performed, followed by recovery. Two years later the woman again became pregnant and was very anxious to have a child. In spite of all possible prophylactic measures pernicious vomiting began again. An injection of 10 ccm. of horse serum was given and three days later the injection was repeated, this time followed by an eruption resembling urticaria. The vomiting as well as the profuse excretion of saliva was soon lessened. Normal delivery took place at full term.

Brouha: Movable Spleen and Its Relation to Obstetrics and Gynecology (La rate ectopique dans ses rapports avec l'obstétrique et la gynécologie). Scalpel, Liege, 1914, lxvi, 659. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Movable spleen is a disease of the female sex. Torsion of the pedicle of the spleen has never been observed except in women. The etiology of ptosis of the spleen is to be found in the pathological relations of this organ to the genital system: frequent congestion of the spleen during menstruation and enlargement of the spleen during pregnancy. The movable spleen may be ruptured during pregnancy by the pressure of the uterus—spontaneous rupture. A number of cases show the connection between delivery and the incidence of blood cysts of the spleen. Torsion of the pedicle is not frequent during pregnancy, but often occurs after the emptying of the uterus. The results of operation in compression or torsion of the spleen during pregnancy and the puerperium are very favorable; among 12 cases there was only one death-8.3 per cent mortality.

The diagnosis of movable spleen is yet more important in gynecology, as this condition may lead to many errors in diagnosis, especially when it is displaced into the pelvis. The form of the spleen is very important, for even when it is enlarged it

keeps its characteristic form. Attention should be given to the disappearance of the normal splenic dullness, though other factors may also play a part in this. It is important if the arterial pulse can be felt in an organ in the pelvis, for this can never be felt in tumors of the genital system, and a zone of sonorous tympany between the tumor and the genital organs is especially significant. But even these diagnostic signs generally fail if there are adhesions between the spleen and the pelvic organs. A careful history is a valuable supplement to the physical examination. COLMERS.

#### LABOR AND ITS COMPLICATIONS

Lipsky: Comparative Value of Prophylactic Version, High Forceps, and Spontaneous Delivery in Contracted Pelvis, from the Material of the University Gynecological (Vergleichende Bewertung der prophylaktischen Wendung mit der hohen Zange und der spontanen Geburt bei Beckenenge nach dem Material der Univ. Frauenklinik zu Moskau). Festschr. f. Po-

bedinsky, Moscow, 1914. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The material collected from January, 1800, to January, 1912, includes 2,727 cases of contracted pelvis with 10,304 deliveries. Among 2,173 cases prophylactic version was practiced in 127, high forceps in 98, and delivery was spontaneous in 1,948. Of the 127 versions 86 were purely prophylactic; 41 were performed after rupture of the membranes but always with a completely dilated os. In primiparæ the mortality of the children was 38.46 per cent, in multiparæ 22.8 per cent. The mortality of the children in version after rupture of the membranes is markedly higher — 34.7 per cent than in purely prophylactic version - 19.8 per cent. The total mortality was 24.4 per cent; after deducting the cases of perforation of the aftercoming head, the mortality was 19.7 per cent. Of the 127 mothers two died, one of them from scorbutus — 1.6 and 0.8 per cent. The morbidity of the mothers was 6.3 per cent, while after high forceps it was 18.35 per cent, which is to be explained by the fact that the trauma is much less in version.

High forceps were applied in 98 cases, 58 times in flat pelvis, 40 times in generally contracted The children were dead in 17.3 per cent of pelvis. the cases. Among 1,948 spontaneous deliveries there were 132 dead children — 71 per cent. Aside from the macerated fœtuses and those that had died before delivery, the mortality was 5.7 per cent. In primiparæ the mortality of the children was greater than in multiparæ — 8.1 and 6.7 per cent. morbidity as well as the mortality of the mothers was naturally much less in the cases of spontaneous delivery — 2.2 and 0.2 per cent — which shows that spontaneous delivery should be accomplished if possible. All methods of delivery give poorer results in generally contracted than in flat pelvis. The average weight of the children was highest in version, lowest in spontaneous delivery. High

forceps give pretty good results if the true conjugate is from 9.9 to 9; if the conjugate is less the results are bad, while prophylactic version gives good results with a conjugate of from 8.9 to 8, and even less if used only in cases of flat pelvis. Further advantages of version are the low morbidity among the mothers and the shorter duration of labor.

JENTTER.

Pouliot, L.: Perineorrhaphy with Extensive Suture of the Levator as a Cause of Dystocia (La périnéorrhaphie avec suture étendue du releveur de l'anus cause de dystocie). J. de mèd. de Par., 1914, xxxiv, 451. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A primipara was delivered with forceps, the result being a large tear of the perineum which did not heal. After six months a myorrhaphy was performed, creating a firm, thick perineum. In the second delivery the os dilated rapidly and the head descended to the floor of the pelvis, then could not rotate around the symphysis, but bored down into the perineum, so that it was shoved into a pocket. Attempts to deliver the head through the anus failed; the posterior commissure lay in front of the head like a firm crossbar. To avoid a central tear of the perineum an incision was made. As there was a justifiable doubt of the viability of the overstretched tissues the tear was not sutured; 16 days later, after the discharge of necrotic tissue, a secondary suture was made. This case gives food for thought. The restoration of the normal anatomical condition should be sought for, but exaggeration of the natural condition by forcible pulling together of the entire muscle mass of the levator and suture has an unphysiological effect. In this case it interfered with delivery, and it is only permissible in women who have passed the child-bearing age.

Gussakoff, L.: Value of Hebotomy in the Treatment of Contracted Pelvis (Zur Frage nach der Wertung der Hebotomie in der Therapie des engen Beckens). J. akush. i jensk. boliez., St. Petersb., 1914, xxix, 511.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In the St. Petersburg Obstetrical Hospital, 17 hebotomies have been performed by Döderlein's method, 7 of which are reported. The side on which the operation is performed is not of great importance; generally the side was chosen toward which the child's occiput was turned, but when the operation was repeated the intact side was always chosen. The hæmorrhage was never severe and yielded to manual compression; it always resulted from injury to the corpus cavernosum of the clitoris. After the incision, delivery was always completed artificially; and though forceps extraction under the circumstances is technically very easy, the author recommends expectant treatment, as vaginal tears may thus be avoided. The latter are caused in extraction by the vagina being injured by the sharp edges of the bone. All the mothers operated upon were discharged in good condition and none of the children

died as a result of the operation.

From his own cases and those reported in the literature the author discusses the value of the operation in contracted pelvis, with respect to its results for both mother and child. He thinks that if it is performed only on strict indications and under thorough asepsis it is deserving of a place among obstetrical operations.

B. Ottow.

Rooy, A. H. M. I. Van: Painless Deliveries (Über schmerzlose Geburten). Nederl. maandschr. v. verlosk. en vrouwenz., 1914, iii, 288.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A II-para who was not aware of her condition lost her child in abortion by precipitate delivery and was accused of infanticide, but was discharged since the possibility of a painless delivery could not be disproved. Van Rooy later treated the same patient and on one visit she complained that a few hours before she had discharged a considerable black mass. Examination showed that it was meconium and that the child's breech was already visible. She had absolutely no pain. Delivery was rapid and painless and the child weighed 4,000 gms. The patient showed no signs of hysteria or tabes. Van Rooy points out the great medicolegal importance of such cases, for in this case a judgment of experts might have condemned the woman. STRATZ.

#### PUERPERIUM AND ITS COMPLICATIONS

Cramer, H.: Oil of Turpentine in the Prophylaxis and Treatment of Puerperal and Gynecological Infections (Das Terpentinöl in der Prophylaxe und Behandlung puerperaler und gynäkologischer Infektionen). Monatschr. f. Geburtsh. u. Gynäk., 1014, xxxix, 789.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

For 10 years Cramer has used oil of turpentine in the local treatment of puerperal infections. He claims that there is absolutely no danger in applying it inside the uterus. He uses the undiluted purified oil, and applies it to the uterine mucous membrane with a gauze sponge. He thinks it has a marked disinfectant action and inhibits the growth of bacteria, especially in fetid lochial secretion. effect lasts for hours, and even days, as would be expected from the characteristic odor of turpentine. It causes no corrosion; it excites a marked leucocytosis and discharge of lymph over the whole surface to which it is applied. He recalls the appearance of aseptic abscesses after the injection of turpentine. He attributes the surprising results often obtained, especially in septic abortion, to the formation of a wall of granulations which hinders further absorption of bacterial products.

In infected abortion he empties and curettes the uterus, and afterwards swabs the cavity with oil of turpentine. There is generally a prompt decline in the fever; and he has never lost a case with this

reatment.

The author has also used the turpentine treatment

with success when fever has persisted for several days after the emptying of the uterus. The method has also been used successfully in puerperal fever. The curve is especially characteristic in a case of puerperal fever following septic angina. A tampon wet with oil of turpentine has been successfully used where there was a fetid discharge after the application of an unclean tampon in placenta prævia. He has not made bacteriological and histological examinations, but hopes that others will make such examinations and confirm his conclusions.

HUFFELL.

#### MISCELLANEOUS

Pinard: Diagnosis of the Duration of Pregnancy and the Date of Its Beginning (Du diagnostic de l'âge de la gestation et de sa dureé). Bull mêd., 1014, xxviii, 535.

1914, xxviii, 535. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

It is impossible to determine in normal women at what time before the last menstruation impregnation took place. There is a period of about a month within which the time of impregnation cannot be determined. In women who menstruate irregularly this period is even greater. The data as to the first movements of the child are equally unreliable. Some women feel movements at the end of the third month of pregnancy, some not until the fifth or sixth. Still others feel fœtal movements long after the child is dead, and some when they are not pregnant at all. The size of the uterus is the only thing from which reliable conclusions can be drawn, and even this varies in different races. In French women the fundus reaches the umbilicus in the fourth month, while Bumm has found that in German women this position is only attained in the sixth month.

Pinard does not believe it possible to determine the exact date of the beginning of pregnancy. The duration of pregnancy also varies. It is not always possible to tell absolutely from a new-born child whether the term of pregnancy has been normal or not

As it is not known positively when pregnancy physiologically begins, neither is it possible to determine the time of its physiological ending. The author does not acknowledge the limits of from 250 to 310 days that Bumm sets for the duration of pregnancy. French obstetricians do not admit the possibility of prolonged pregnancy. They believe that if a child is born 300 days after the last menstruation there has been delayed impregnation, as Lataste has shown in experiments.

Puppel, E.: The Biological Pregnancy Reaction and Its Results in Practice (Die biologische Schwangerschaftsreaktion und ihre Ergebnisse in der Praxis). Monatschr. f. Geburtsh. u. Gynäk., 1914, xxxix, 764.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

After several experiments, the biuret reaction was given up on account of the difficulty of interpreting

it, and only the ninhydrin reaction was carried out. It is sometimes difficult to determine the color of the cooked material. If there is a slight bluish color it is recommended that 0.2 ccm. more ninhydrin be added and the material boiled again. The author recommends that to 5 ccm. of the same dialysate o.2 ccm. ninhydrin be added and the mixture boiled again. If the blue color is intense the reaction is positive.

The blood is collected by venesection; in other points the author adheres strictly to Abderhalden's method. There are a few mistaken reactions, which the author attributes to failures in technique. He

believes in the specificity of the reaction.

An early diagnosis of pregnancy is very desirable under the following conditions: To differentiate between the climacteric and pregnancy; in nursing women where the periods have stopped; in general diseases, such as tuberculosis and kidney or heart disease. The further development of the Abderhalden reaction is of great practical importance.

HEIMANN.

Kjaergaard, S.: Abderhalden's Pregnancy Reaction; Its Methods and Specificity; Studies in Normal Women before and after Menstruation (Über Abderhaldens Graviditätsreaktion, ihre Methodik und Spezifität, Untersuchungen von gesunden Frauen post- und prämenstruell). Zischr. f. Immunitätsforsch. u. exp. Therap., 1914, xxii, 31. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author does not agree with those who think that Abderhalden's reaction furnishes a reliable diagnosis of pregnancy. In spite of all modifications in the technique, some non-pregnant sera show greater proteolytic power on placental tissue than the weakest pregnant sera. The difference demonstrated by the Abderhalden reaction between pregnant and non-pregnant sera is only quantitative in nature. By modifications in the technique it can be shown that all serums have a proteolytic action on placental tissue. Stress should be laid, therefore, on the reaction time, amount of placenta, amount and concentration of serum.

During pregnancy there is a marked increase in proteolytic power, so that sera of pregnant individuals react much more strongly than sera of nonpregnant ones. There are a number of diseases, such as cancer, febrile salpingitis, achylia, metrorrhagia, etc., in which proteolytic action is also increased. A slight or negative reaction indicates that pregnancy is not present, but a positive reaction may be caused by other conditions than pregnancy and is therefore of much less diagnostic value.

The normal proteolytic power in women shows cyclic changes from menstruation to menstruation with an increase in the premenstrual period. This premenstrual increase may give rise to reactions similar to those of pregnancy, and therefore it has a practical as well as a theoretical significance. It can be shown by the optic method as well as by dialysis that all non-pregnant serum has proteolytic action on placental peptone as well as on coagulated placental albumin. In polarization experiments. also, examples have been seen in which non-pregnant sera had such marked proteolytic action that it equaled or excelled that of pregnant sera.

H. KÄMMERER.

Mironowa, S. M.: Serum Diagnosis of Pregnancy by Abderhalden's Dialysis (Die Serodiagnostik der Schwangerschaft nach dem Abderhaldenschen Dialysierverfahren). J. akush. i jensk. boliez., St. Petersb., 1914, xxix, 803.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In 45 cases of normal pregnancy the reaction was positive in every case; in non-pregnant women it was negative in 40-82.5 per cent. In the earlier stages of pregnancy it is more intense than in the later. It is of value in the diagnosis of extra-uterine pregnancy only in progressive or fresh recently interrupted cases. Eclampsia, nephritis, and per-nicious vomiting decrease the significance of the reaction. Sometimes it is positive in fever and in inflammatory suppurative diseases of the adnexa.

Landsberg, E.: Study of Albumin and Mineral Metabolism in the Pregnant Woman; Animal Experiments, Especially in Reference to the Function of the Glands of Internal Secre-(Eiweiss- und Mineralstoffwechseluntersuchungen bei der schwangeren Frau; Tierversuchen mit besonderer Berücksichtigung der Funktion endokriner Drüsen). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 53.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The balance of albumin, phosphorus, calcium, and magnesium is never negative in the different months of pregnancy if the woman takes the amount of nourishment that her appetite demands. appetite of pregnant women increases and the excess of nutrition serves to keep up the normal increase in weight. In the latter months of pregnancy, the pregnant woman shows a tendency to limit her movements, which also favors the putting on of weight. The presence of the fœtus in the maternal body causes a universal tendency to hyperplasia.

Animal experiments show that the ovaries in pregnancy exercise an assimilatory effect on nitrogen metabolism through the true corpus luteum and the interstitial ovarian glands, by which nitrogen excretion is decreased. On the contrary, the reaction on the secretion of the thyroid gland, which influences metabolism in the direction of marked dissimilation, is less in pregnancy than at other times. Forces must be active which make it possible for the "pregnancy cell" to further assimilative processes and to inhibit dissimilative ones. By assimilative ovarian hormones and, more especially, by the presence and growth of the fœtus itself, the maternal cell is placed in a condition which favors assimilation and inhibits dissimilation. There is a tendency to increase of substance. The fœtus in its relation to the

mother is in a certain sense a parasite; hence, if the mother does not get sufficient nutrition, the fœtus thrives at the expense of the maternal tissues. There is no uniform effect of maternal nutrition on the weight of the child. With very abundant administration of a certain element of food there may be an increased passage of this element into the fœtus, but on account of its aggressive character, if the fœtus is not sufficiently nourished, it strives to obtain material from the mother's reserve store. Therapeutic measures aimed at producing small children by undernutrition of the mother for the sake of making delivery easier, not only fail in their purpose but may be directly injurious to the mother.

Treub, H.: Dermographism in Pregnancy (Schwangerschaftsdermographie). Nederl. maandschr. v. verlosk en vrouwenz., 1914, iii, 280.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

By chance Treub discovered that when the skin of the abdomen of a patient in the late months of pregnancy was touched lightly, white stripes appeared and remained for a greater or less time. On further examination he found that this phenomenon appeared regularly in pregnant women, and sometimes during the puerperium. It never failed to appear in pregnant women when they were lying down, but when they were standing sometimes it could not be elicited. The abdomen reacted promptly, the thigh and the arm little or not at all. Control experiments showed, however, that a similar dermographism appeared in non-pregnant women, men, and boys. He does not think, therefore, that the sign is pathognomonic of pregnancy, but thinks

Roos van den Berg, W. I.: The Excretion of Creatin and Creatinin in Pregnancy, Labor, and the Puerperium (Die Ausscheidung von Kreatin and Kreatinin bei Schwangerschaft, Geburt, and Wochenbett). Dissertation, Utrecht, 1914. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

that it indicates a slight pregnancy toxicosis, which favors vasomotor disturbance. The abdomen reacts

because of the tension of the skin.

In order to secure authentic results meat was excluded from the diet of the patients used for the experiments. The determinations were made without catheterization by Folin's method. In the examination, which extended over several weeks, 73 women in all were examined. Among the cases were 13 of eclampsia, 4 of them fatal; 12 of severe toxicoses with one death from sepsis; 13 of albuminuria of pregnancy; 2 of chronic nephritis; and 25 without severe disturbances in metabolism, among them 17 with pyelitis and cystitis, 5 with hydramnios, 1 with hydatidiform mole, and 2 with premature separation of the placenta. Detailed tables are given.

The author regards increased excretion of creatin and creatinin as a secondary symptom of pregnancy, but thinks it has no value in differential diagnosis because it may appear elsewhere than in pregnancy and may be lacking in pregnancy. It is not even pathognomonic of the toxicoses of pregnancy. In the first few days of the puerperium creatin excretion increases markedly, as a rule, and generally disappears in the third to the fourth week. In pregnancy and in the first few days of the puerperium, creatinin excretion is generally increased. Pregnancies with toxicoses do not differ in these respects from normal pregnancies. Probably there is a direct connection between creatinin excretion and the increase in tonus of the uterine musculature.

Fabre and Petzetakis: Changes in the Jugular Pulse During Pregnancy (Modifications du pouls jugulaire pendant la grossesse). Bull. Soc. d'obst. et de gynêc., 1914, iii, 309.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The changes in the circulatory system during pregnancy are for the most part mechanical in nature. The heart is displaced during pregnancy, the apex beat is outside the mamillary line, the right boundary outside the right border of the sternum. There is no true hypertrophy. The first tone is frequently changed and the second tone reduplicated. Murmurs are generally functional in nature. The arterial and venous pulses are not changed.

The blood-pressure is normal in normal pregnancy. In albuminuria there is increased blood-pre-sure and bradycardia. Bradycardia also occurs in some cases without albuminuria, in conjuction with a valvular second sound, and also in the preëclamptic period. There is a fall in blood-pressure in infectious diseases. There is irregularity in blood-pressure in organic, acquired heart diseases. In pernicious anæmia there is a marked fall in blood-pressure, accompaned by dilatation of the right side of the heart, and extreme changes in the pulse-curve, indicating fatty degeneration of the myocardium, which is found on autopsy.

Mosbacher.

Lindau, G. H.: Study of True Adenoma of the Umbilicus (Ein Beitrag zur Kenntnis des wahren Nabeladenoms). Stud. z. Path. d. Entwickl., 1914, i, 375.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Mintz, in 1909, defined true adenomata of the umbilicus as tumors originating from remnants of the omphalomesenteric duct in the umbilical scar. The author has found only 6 cases reported in the literature and by the addition of two new cases he increases this number to 8. The first tumor, which was as large as a walnut, occurred in a 34-year-old woman; the second, in a 46-year-old woman, measured 21 x 17 mm. The walls of all the glandular spaces in both of the tumors were covered with cylindrical epithelium, in some places one layer, in other places several layers. This epithelium was very similar to the primitive intestinal epithelium. In the second tumor there was beginning malignant degeneration, and in the skin over it there was hypertrophy of the sweat glands, which the author thinks

was due to the irritation caused by the growing and inflamed tumor; he thinks both it and the tumor were part of an anomaly in development. A detailed microscopic description is given of a carcinoma of the umbilicus treated with radium, and of its glandular metastases in Douglas' pouch and the peritoneum.

Weishaupt.

Schäfer and Haendly: Teratoma of the Umbilical Cord (Teratom der Nabelschnur). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 295.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A tumor almost as large as a child's head was found in the course of an otherwise normal umbilical cord, about 5 cm. from the umbilicus. The tumor was cystic and on the inner wall there were numerous small nodules. Microscopic examination showed that there were derivatives of all three germinal layers interwoven with each other in the tumor, therefore showing that it was a teratoma of the umbilical cord.

Frankenstein.

Buglia, G.: Passage of the Products of Albumin Digestion from the Mother to the Fœtus (Sur le passage des produits de digestion des substances protéiques de la mère au fœtus). Arch. ital. de biol., 1913, lix, 329.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Products of pancreatic digestion (Witte-Pepton) in physiological salt solution were injected intravenously into pregnant dogs. The amount of nitrogen not originating from proteins was determined in the blood of both mother and fœtus before and after the injections; the albumin nitrogen was precipitated with a saturated solution of tannic acid and Kjeldahl's method used to determine the total nitrogen in the filtrate and precipitate. In this way the transference of a certain amount of the products of digestion of the albumin bodies from the maternal to the fœtal blood was demonstrated. After the injections the maternal urine showed a decrease in nitrogen, probably a result of the increased secretory activity of the kidney caused by the injection of the hypertonic fluid. No marked difference could be noted between the allantoic and the amniotic fluid.

Graham, E. A.: The Origin and Nature of Fœtal Movements. Surg., Gynec. & Obst., 1914, xix, 360. By Surg., Gynec. & Obst.

Asphyxia of the fœtus of sufficient grade will result in the production of fœtal movements, more or less severe. The movements thus produced vary from mere attempts at respiration, sometimes resembling the fœtal hiccup of Mermann, to more

general muscular contractions, simulating the general convulsions of  $CO_2$  poisoning seen in the adult. At times these movements are sufficiently violent to be seen through the abdominal wall as distinct shocks.

All of the generally recognized varieties of fœtal movements, except those concerned with swallowing and sucking, have been produced experimentally by methods which induced an asphyxia of the fœtus. The intra-uterine respiratory efforts are not accompanied by an aspiration of any appreciable quantity of fluid into the lungs and hence are not incompatible with life after birth. The explanation of this is not clear, but probably the contact of the skin with the air is an important factor in opening up the respiratory passages. The hypothetical intra-uterine rhythmical respiratory movements of Ahlfeld were not observed.

The suggestion is made that the various active movements of the feetus experienced by many pregnant women in the latter part of pregnancy are expressions of a more or less severe, but usually transient, asphyxia of the feetus.

Arnold, J. O.: Answers to Some Practical Questions on the Use of Pituitary Extract in Obstetrics. Penn. M. J., 1914, xvii, 959.

By Surg., Gynec. & Obst.

The author takes up the various questions which are so frequently asked regarding the value, indications for the use of, and the contra-indications to the use of pituitrin in obstetrics. He advocates the "safety first" rule of giving pituitrin only in those cases where low forceps would be indicated if we did not have this or some other equally effective oxytoxic. If used according to this rule it will greatly reduce the number of forceps deliveries and will be as free from danger as any other therapeutic agent and certainly as harmless in the hands of the average practitioner as the obstetric forceps. He can see no excuse for the very extensive present-day use of pituitary extract except the spirit of impatience and hurry which characterizes American obstetrics. The improper use of this extract has caused rupture of the uterus in a number of cases, and death to the mother and the unborn child.

About a year ago, Wagner of Vienna called attention to the dangers attending the use of pituitary extract in very anæmic women, or in those who have lost much blood, stating that its effect on the coronary arteries in such cases may sometimes cause a fatal angina or collapse and death. The author has collected five cases in which this drug was considered responsible for the child's death.

C. H. Davis.

## GENITO-URINARY SURGERY

#### KIDNEY AND URETER

Reich and Beresnegowski: Study of the Adrenalin Content of the Adrenals in Acute Infections, Especially Peritonitis (Untersuchungen über den Adrenalingehalt der Nebennieren bei akuten Infektionen, besonders Peritonitis). Beitr. z. klin. Chir., 1914, xci, 403.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In 1909, Hornowski published a paper in which the statement was made that in fatal cases of anæsthesia and in unexplained deaths from so-called surgical shock there was an exhaustion of the chromaffin system, and that possibly this was the cause of the sudden failure of the circulation. This caused Reich and Beresnegowski to undertake some experiments with a view to determining whether there were similar anatomical findings in the fall in blood-pressure caused by peritonitis. The adrenalin content of the suprarenal glands was demonstrated histologically, the demonstration being based on the affinity of the adrenalin containing medullary cells for chromium. The authors prefer the Giemsa stain recommended by Schmorl to von Wiesel's method.

It may be regarded as proved that the chromium reaction is due exclusively to the presence of those adrenal substances that, in biological experiments, with the extract of the glands produce fall in blood-pressure, dilatation of the pupil, and stimulation of smooth muscle, and are commonly known as adrenalin, and that, moreover, under normal conditions, a marked chromium reaction can always be demonstrated.

strated histologically.

In experimental peritonitis in rabbits ending in death the authors always found marked decrease is chromaffin in the adrenals. Further experiments showed that the chromaffin reaction was influenced very quickly and intensely by acute general infections with bacterium coli and pneumococci, but that if the infection was too acute, death occurred before there was any marked effect on the chromaffin. The authors did not settle the question of whether the chromaffin substance was influenced to different degrees by intra- and extraperitoneal infections. They believe that the influence on the chromium reaction and the effectiveness of the extract in general infections is a primary rather than a secondary one, and that it is caused directly by the bacteria or their toxins. They think the hypothesis very plausible that the fall in blood-pressure in infections is due primarily and, in many cases, almost exclusively to central vasomotor paralysis, but that in other cases there is a peripheral hypotonus of the vessels caused by adrenal insufficiency that increases the effect. In the second part of the work they tested Heidenhain's treatment of fall in bloodpressure from peritonitis with infusions of adrenalin-salt solution. They showed that in normal rabbits copious injections of salt solution did not produce any disturbance of the balance of adrenalin production, and that if adrenalin is artificially added in toxic quantities the adrenal glands of normal animals suffer a considerable decrease in their physiological adrenalin content. Parallel experiments in rabbits with peritonitis did not give uniform results. A stronger chromium reaction in peritonitis was not obtained by the use of adrenalin infusions. The decrease in chromaffin substance was the same in all animals dying of peritonitis, whether they were treated with salt solution, salt solution with adrenalin added, or not at all.

From further experiments the authors concluded that in rabbits the course of an acute peritoneal infection is favorably influenced by injection of salt solution containing adrenalin, but they could not tell whether the effect was due to the salt solution or

to the adrenalin.

In the third part of the work they report the results of a study of the adrenals in man. If the results of animal experiments are to hold good in man it will be necessary to demonstrate histologically or chemically a decreased adrenalin content in cases of weakness of the circulatory system. Therefore they examined the adrenals of 27 patients who died of acute peritonitis, and the organs in 12 cases of non-peritoneal septic infection, in 2 cases of hæmorrhage, and in 9 cases of chronic infectious diseases.

The human adrenal material seemed to the authors not well adapted to histological study of the anatomical condition of the chromafin tissue during life, and to conclusions as to its functional condition; therefore they could attach full value to the chromium reaction in human adrenal glands only when it was positive. Negative reactions should be judged with great caution.

The conclusion reached by the authors is that acute fatal peritonitis in man does not cause the same uniform decrease in the chromaffin substance of the adrenal glands that it does in rabbits with peritoneal sepsis.

Kolb.

Kindley, G. C.: The Adrenals in Acute Infections. Tex. St. J. Med., 1914. x, 195. By Surg., Gynec. & Obst.

The writer reviews the history of the knowledge of the adrenals through various stages from their discovery down to the present day, and appends a large bibliography.

His aim is to determine the pathological changes in the adrenals in infectious diseases. His material consisted chiefly of clinical histories and postmortem records of patients dying of acute infectious diseases, 45 cases in all being studied: lobar pneumonia, 9; bronchopneumonia, 13; typhoid fever, 9; cerebrospinal meningitis, 8; general miliary tuberculosis, 4; and yellow fever, 2.

Only one adrenal in each case was sectioned and the stain was made by hæmatoxylin by the Van Gie-

son method.

The results of the study were recorded in a series

of tables, a summary of which follows:

The medullæ of the adrenals showed the following conditions: Cellular atrophy, 27 cases; congestion, 18 cases; small hæmorrhages, 2 cases; foci of infiltration of lymphocytes, 8 cases; fibrosis, 2 cases; cavitation, 4 cases; post-mortem degeneration, 3 cases; and normal, with chromaffin-cells staining rather deeply, 4 cases. While more than one change in a single case was frequently noted, there were also graduations in the severity of each particular process. The most constant changes, and doubtless the most important, were seen to be cellular atrophy and congestion. These conditions were present, either singly or together, in 34 cases—practically three-fourths of the number studied. change—atrophy of the cells—predominated in bronchopneumonia and typhoid fever, while congestion was more prominent in lobar pneumonia and epidemic cerebrospinal meningitis. In the 4 cases in which the adrenals were normal, the heart musculature was more or less degenerated. The 3 cases of post-mortem degeneration were well marked, but as to this the writer is inclined to agree with Gruner, who says that post-mortem changes in the adrenal medulla are not as frequent as is commonly supposed, even if thirty hours elapse before the tissues are fixed. A. C. STOKES.

## Brown, P.: The Röntgen Determination of Certain Renal and Ureteric Variations and Disorders. Boston M. & S. J., 1914, clxxi, 373. By Surg., Gynec. & Obst.

The keynote of this article is cooperation and collaboration between surgeon, cystoscopist, and

röntgen worker.

The element of visceral abnormality in which the röntgen rays have proved to be a diagnostic factor in this field may be divided into (1) enlargements of the renal viscus, with but secondary reference to its pelvis; (2) dilatation of the renal pelvis, with no especial reference to the interstitial tissue; and (3) a combination of renal enlargement and pelvic dilatation.

It is usually extremely hard, without accessory or secondary knowledge, to determine röntgenologically between a hypertrophy due to compensatory change and an enlargement due to hydrostatic pressure or to primary disease. From this viewpoint alone, collaboration is decidedly advantageous.

H. W. PLAGGEMEYER.

Stanton, E. M.: The Causes of Renal Pain. N. Y. No. 1. Med., 1914, xiv, 463.

By Surg., Gynec. & Obst.

In discussing the causes of renal pain which are produced by pathological conditions, the author cites two very different varieties of pain associated with diseases of the upper urinary tract: (1) the typical renal colic with its excruciating violent and radiating pains; and (2) the fixed pain, which in its turn may

be dull and vague or sharp and intense.

The type of pain typified by renal colic is due to excessive contraction of the smooth muscle in the pelvis and ureter. Any stimulus, whether mechanical or chemical, which is capable of exciting excessive urethropelvic contractions seems capable of causing renal colic; e.g., inflammatory processes involving the ureter or pelvis may be the cause of painful spasmodic muscular contractions in these structures. Colic may also result from efforts to propel a foreign body along the ureter, and the lumen may be obstructed by stricture, by a kink, or by pressure from without.

Fixed pains are mostly due to distention of the renal capsule, as by acute congestion or parenchymatous swelling, traction on an inflamed capsule; and in neurasthenic enteroptosis the simple drag of the non-inflamed organ on its attachments seems

capable of producing the pain.

Stanton groups the causes of renal pain under the following heads:

1. True kidney pains: infraction, acute and chronic nephritis, renal congestion, pyelonephrosis, tumor growths, nephralgia, and renal crises.

2. Pains caused by distention or muscle spasm along the upper urinary tract; renal colic due to pelvic and ureteral irritability without demonstrable obstruction; renal calculus; ureteral obstruction—intermittent hydronephrosis; infections; and hæmorrhage.

3. Malpositions; Dietl's crises and dragging

pains.

The most typical example of renal pain is seen in cases of unilateral infarcts of the kidney. Acute paroxysmal pain occasionally accompanies either acute or chronic nephritis.

Renal congestion is well exemplified by the dull ache. Pyelonephrosis is frequently the cause of the fixed type of renal pain, and in pyelonephritis and cystic infections of the upper urinary tract the ab-

sence of pain is often encountered.

Tumors of the kidney frequently produce early intracapsular tension pain. Nephralgia is used as a diagnosis only where no definite cause for the pain can be located.

Renal crises are very rare. In paroxysmal pains of renal origin one should look for tabes or other

lesions of the central nervous system.

As regards calculi as a cause of renal pain it is to be remembered that typical renal colic is not necessary for the diagnosis of calculi, as they may be causing widespread destruction of the kidney with little or no pain.

Ureteral obstruction is a frequent cause of renal pain.

Early renal tuberculosis is frequently accompanied

by well-marked pain.

Colicky pains frequently accompany all of the purulent infections of the upper urinary tract and are probably the result of temporary complete ob-

Renal hæmorrhage accompanied by the formation of clots in the pelvis or ureter is usually accompanied by renal colic.

Malpositions of the kidney result in kidney pain

of a dragging character.

Hydronephrosis in the presence of movable kidney is usually due to periodic kinking of the pelvis or ureter over aberrant blood-vessels.

True Dietl's crises have been very rare in the ex-THEO. DROZDOWITZ. perience of the author.

## Cabot, H., and Brown, L.T.: Treatment of Movable Kidney With or Without Infection by Posture. Boston M. & S. J., 1914, clxxi, 369. By Surg., Gynec. & Obst.

The authors present an extremely interesting consideration of the relationships existing between the thoracic-abdominal "shape" and the functioning capacity of the subdiaphragmatic organs, and considers the difference between the normal and the average body.

In the normal body, practically all the solid abdominal viscera lie in a plane above a cross-section through the umbilicus, the right kidney being protected especially by the right lobe of the liver, and ying without undue pressure in its bed of retroperitoneal fat. On the left side the small intestine and the sigmoid act as a balloon support in normally shaped bodies.

In the average body or in the distinctly abnormal body, with sunken chest, narrow xiphoid angle and lax or protruberant abdomen, all normal supports are relaxed, with consequent derangement of blood supply, and all the ills attendant upon ureteral dislocation and loss of integrity of the sympathetic

nervous system.

The paper as a whole is a plea for cooperation between the urologist and the orthopedist, and urges a careful consideration of the external lines of the body in addition to the usual careful routine study of the viscera. H. W. PLAGGEMEYER.

## Furniss, H. D.: Colon Bacillus Infections of the Kidney. Post-Graduate, 1914, xxix, 674. By Surg., Gynec. & Obst.

Colon bacillus infections of the kidney are discussed by the author under the following headings: (1) Why are the urinary organs so susceptible to the colon bacillus? (2) What are the factors predisposing to infections? (3) What are the exciting causes? (4) How does it gain entrance? (5) What is the natural course of the infection? (6) What method offers the best hope of eradicating the infection?

Each of these questions is answered very logically and clearly, but the paper does not lend itself to abstraction. IRVIN S. KOLL.

#### Chute, A. L.: Some Observations on Pyogenic Infections of the Upper Urinary Tract. Boston M. & S. J., 1914, clxxi, 368.

By Surg., Gynec. & Obst.

The author considers renal infection from the standpoint of the blood-stream, the ureters, and the lymphatics, and feels that the avenue of approach most threatening to the integrity of renal function is the ureteral one, since this type of infection is so often associated with back pressure or obstruction.

The relative frequency of the colon bacillus, staphylococcus, and pyocyaneous is in the order named, though there are few pyogenic organisms that may not serve as the medium of infection in the upper urinary tract.

There is no constancy of the lesion brought about by the infection of a kidney with a given organism. Neither does the route of infection necessarily pro-

duce a definite type of lesion.

Especial emphasis is laid upon the necessity of a tentative diagnosis of acute renal infection in children presenting an indefinite illness with tempera-

Pure pyelitis is rare. There is usually some involvement of the renal tissue, so that strictly speaking the cases are pyelonephritis, the extent of the nephritic element being roughly indicated by the amount of albumin present in the urine.

The estimation of the amount of albumin is an easier and quicker way of distinguishing between an inflammatory invasion of the upper and lower tract than by depending upon the finding of casts and other distinctly renal elements. With a considerable suppuration, casts are only rarely found—therefore their absence is of no real value. Bladder lesions, excepting papillomata, do not usually give more than one per mille of albumin by Esbach, while upper tract lesions may give considerably more.

The underlying principle of treatment in chronic infections is the securing of adequate drainage in cases where conservative treatment is possible.

While conservative treatment thus far has been anything but encouraging, and while brilliant results have been secured from the removal of a suppurating kidney in the presence of a well kidney it is necessary to seek for a conservative solution of the problem rather than to persist in the radical attitude at H. W. PLAGGEMEYER. present held.

## Datyner, H.: Renal Hæmaturia (Über renale Hämaturien). Arch. f. klin. Chir., 1914, civ, 466. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author reports three cases of renal hæmaturia. In one case, that of a 54-year-old man, one kidney was removed on account of severe hæmor-The bleeding was the only clinical symptom. On microscopic examination a parenchymatous nephritis was demonstrated. In the other cases — men of 28 and 50 years — the diagnosis of renal hæmorrhage as a result of nephritis could be made with certainty. The symptoms in one of the patients were more those of "kidney colic," in the other those of "hæmaturic nephritis."

The author believes that in many of the cases of so-called idiopathic renal hæmorrhage there is really a nephritis, but that there are a few cases that must really be designated idiopathic. A socalled unilateral nephritis is always a bilateral disease, but more marked on one side than the other. If conservative methods fail, nephrotomy must be performed, which, moreover, often has to be done in order to make a positive diagnosis. In other cases decapsulation or extirpation of the kidney is indicated. OEHLECKER.

Baggerd: Copious Hæmorrhage into the Bed of the Kidney (Zur Kenntnis der Massenblutungen ins Nierenlager). Beitr. z. klin. Chir., 1914, xci, 454. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The case the author cites was a 44-year-old patient who had suffered for years from severe, paroxysmal pains on the right side, frequently appearing after taking alcohol. The pains were apparently due to hydronephrosis. Some days before admission to the hospital the patient had had an especially severe attack, and there had been blood in the urine, which had never occurred before. There was marked anæmia, pain, hæmaturia, and a tumor suddenly appeared in the right kidney region. As hæmorrhage from any other source could be excluded and as the author had once before seen a similar case, he made a diagnosis of copious hæmorrhage into the bed of the kidney. Immediate operation confirmed the diagnosis, but rapid nephrectomy was unsuccessful, and the patient died in a few hours.

The author discusses briefly the previous literature - 26 cases - especially with regard to the localization of the hæmorrhage, whether intra-, inter-, or extracapsular, and describes the clinical picture in his own and the previously published cases. He believes that in his case there was a kinking at the outlet of the kidney pelvis that caused hydronephrosis, and that this in turn caused rise of blood-pressure at the time of the attacks; this, in connection with the injury to the blood-vessels from an extensive glomerulonephritis that could be demonstrated microscopically in the specimen, led to considerable capillary hæmorrhage. The hæmorrhagic area was as large as a boy's head. Neither in this case nor in any of the earlier ones was a large vessel found to be the source of the hæmorrhage.

It is possible to diagnose the condition, although it may be, and has been, confused with other intraabdominal diseases, for instance, of the gall-bladder and appendix, or with other kidney diseases, as hydronephrosis and paranephritis. Important signs in the diagnosis are the rapidly developing tumor, severe localized pain, and the symptoms of internal hæmorrhage. The prognosis with conservative treatment is bad; all the cases so treated have died.

With early operation the results are, as a rule, good. The treatment should be operative: either simple incision, cleaning out of blood-clots and tamponing, or nephrectomy, depending on the individual case and the cause of the hæmorrhage. In suppurative processes, hydronephrosis, tuberculosis, and tumor of the kidney, nephrectomy should be performed. ELLERMANN.

Schwarzwald, R. T.: Arteriosclerosis of the Kidney
(Zur Frage der Nierenarteriosklerose). Ztschr. f.
Urol., 1914, viii, 391. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

This is a short report of three cases from Zuckerkandl's clinic in which arteriosclerotic changes were found in the kidneys after kidney colic and hæma-The arteriosclerosis was visible macroscopically in one case; in the others it was recognizable in the histological picture. There were typical changes in the arteries and in the blood around them; around the atrophic foci there were signs of reactive inflammation.

The author believes that many of the cases reported as circumscribed nephritis are really such demarcating inflammatory processes, and suggests for these cases the name of "dyspraxia renis inter-

mittens angiosclerotica."

In the discussion, LOHNSTEIN, of Berlin, and HEY-MANN, of Düsseldorf, reported cases of essential hæmaturia observed by them, in which nephrotomy brought about complete recovery. In Heymann's second case there was also arteriosclerosis. Mankiewicz, of Berlin, reported two cases of renal hæmorrhage due to hæmophilia, in which the bleeding was stopped by absolutely dry diet and gelatin. RUBRITIUS.

Lund, F. B.: Rovsing's Operation for Congenital Cystic Kidney. J. Am. M. Ass., 1914, lxiii, 1083. By Surg., Gynec. & Obst.

After a very interesting discussion of the pathology of congenital cystic kidney, the author divides the clinical history into three stages:

1. The stage of progressive enlargement in one or both kidneys, without any subjective symptoms.

2. The stage of subjective symptoms and objective signs, which may last from a few months to six or eight years.

3. The stage of decreasing elimination of urine, in which appear the symptoms of uræmia or cerebral

complications.

Males and females are equally affected, and a fatal issue usually takes place in the fourth, fifth, or sixth decade. The enlargement is rarely discovered before adolescence.

A detailed description is given of the operation according to Roysing's method, each point of which is of such intimate value to the success of the operation that it does not lend itself to abstraction.

IRVIN S. KOLL.

MacNider, W. de B.: The Vascular Response of the Kidney in Acute Uranium Nephritis; the Influence of the Vascular Response on Diuresis. J. Pharmacol. & Exp. Therap., 1914, vi, 123. By Surg., Gynec. & Obst.

In this third and concluding article of a study of the vascular response of the kidney in acute uranium nephritis, MacNider undertakes to determine which element of the kidney, vascular or epithelial, is most concerned in the establishment of anuria. Pearce, Eisenbray, and Hill, in recent experiments on animals nephritic from potassium bichromate, uranium nitrate, or corrosive sublimate, observed that, following an anæsthetic, these animals became anuric. Pearce et al also noted that in certain animals, nephritic from uranium and anuric following an anæsthetic, the renal vessels were still responsive to such stimuli as caffein, adrenalin, etc., and explained this absence of diuresis with vasodilatation as due to an impermeability of the glomerulus as a result of the anæsthetic.

In his earlier experiments, MacNider found histological evidence of severe tubular injury in all kidneys which had shown anuria or a condition approaching anuria, whereas in these kidneys there was never any constant or marked vascular change histologically. In order to determine the relative epithelial or vascular responsibility in the anuric state, experiments were undertaken to compare the vascular response of animals nephritic from uranium, which become anuric following an anæsthetic (Group II), with other animals, the controls, nephritic from the same quantity of uranium, but which do not become anuric following Grehart's anæsthetic (Group I), or following morphine-ether anæsthesia (Group III). It was possible to show by these experiments that the renal vessels remain responsive to stimuli which cause an increase in kidney volume (measured by the oncometer), vasodilatation, or a decrease in kidney volume, vasoconstriction. The degree of this response was seen to vary in animals of the same group as well as in those of the different groups, so that it was not possible to determine in which group the animals were the most responsive. The experiments, however, demonstrate that following a vasodilatation from caffein in the control animals, Groups I and III, which may be as low as plus 32 to plus 37 mm., an increase in urine output occurs, but that a much greater vasodilatation in the anuric animals, Group II (plus 63 to plus q1 mm.), does not cause a flow of urine. Mac-Nider, therefore, concludes:

1. When caffein is given to an animal nephritic from uranium with an epithelial element intact, following a rise in kidney volume from the vasodilatation induced by the caffein, there is an increase in

the flow of urine.

2. When, however, caffein is given to an animal nephritic from uranium with an epithelial element which is in various stages of necrosis, there is no change in the rate of urine flow even though the vascular response from the caffein may be as great

as, or greater than, the vascular response in the animals in which the caffein was of diuretic value.

3. From the investigation it would appear that the functional capacity of the kidney nephritic from uranium is more dependent upon an intact epithelial element than it is upon a responsive vascular mechanism. FRANK HINMAN.

## Smith, F. H.: Pyelitis in Children, a Cause of Obscure Fever. Old Dominion J., 1914, xix, 77. By Surg., Gynec. & Obst.

This author brings out a very important point in the introduction of his article; viz., that until the urine has been examined, no case of febrile illness in children should be regarded as obscure. In some children the cause of the unexplained fever is revealed as pyelitis. In a predisposing etiology, he mentions three points of importance: (1) The preponderance of pyelitis in female children. (2) It occurs most frequently under twelve months of age, which fits in with the theory suggested by the sex: that the causation depends upon the soiling of the vulva with fæces, the fæces passing thence into the bladder, ureter, and pelvis of the kidney. (3) The colon bacillus is in the largest majority of cases the exciting cause—a further substantiation of the belief that the infection comes from the bowel.

IRVIN S. KOLL.

#### Ballenger, E. G., and Elder, O. F.: The Diagnosis of Surgical Affections of the Kidney and Bladder. Atlanta J .- Rec. Med., 1914, lxi, 250.

By Surg., Gynec. & Obst.

The authors have given a general summary of genito-urinary diagnosis, illustrating the various steps by case reports. One of these cases is of especial interest. An abscess developed following an intermuscular injection of quinine in the right hip. Large quantities of pus appeared in the urine. An osteosarcoma of the hip was eliminated and cystoscopy was done. Pus was observed coming from a small opening in the right side of the bladder. Indigo-carmin came through the urinary orifices, but the drainage from the pus opening was uncolored. Drainage of the hip abscess demonstrated that it had pointed through the sacrosciatic foramen, along the sciatic nerve into the pelvis, and then retroperitoneally below the brim of the pelvis and along the ureter into the bladder. C. D. PICKRELL.

#### Fitz, R.: The Value of Tests for Renal Function in Early and Advanced Bright's Disease. Am. J. M. Sc., 1914, cxlviii, 330. By Surg., Gynec. & Obst.

Fitz's compilation of the present status of the literature on the value of renal functional tests in Bright's disease is certainly a contribution which clears up a great many knotty points. The article is well worth reading, not only for the case reports, but for the individual theorizing of the author and the citations from the literature.

After discussing the works of Fleisher, Schlayer, Voit, and Janeway, and discussing the procedures of Folin, Denis, Marshall, and others, he concludes that on the whole the functional test is of great value. These observations merely emphasize that if the degree of renal insufficiency is to be judged with accuracy more than one test must be used.

Fitz believes that the study of the nitrogen excretion is of some value, provided always that begin-

ning uræmia can be excluded.

Obermeyer and Pepper showed that cases of uræmia have a higher incoagulable nitrogen content in the blood than normal individuals have, and Widal has gone so far as to say that it is possible to base an approximate prognosis as to length of life on the degree of urea retention. Strauss opposes the entire proposition and says that the high percentage of urea content is always an indication of uramia, and Foster's results bear out the statement.

Widal has also emphasized the relation of faulty sodium chloride excretion to ædema and its independence of nitrogen retention, although Bickel was unable to corroborate this by means of electrical

Bohne assumes that much of the retained sodium chloride in nephritis is stored up in the tissues rather than in the blood, while Marie assumes that the chlorides are "free" and that they increase the

concentration of the blood and tissues.

Fitz believes that whatever the relation of salt retention to ædema may be, there is no doubt that certain cases of advanced nephritis with normal function in other regards are unable to excrete sodium chloride and so develop ædema. The cases reported by Austin and Pepper and by Baetjer demonstrate this strikingly. In Baetjer's cases, which were of well-marked nephritis, the phthalein and lactose outputs were normal or increased; yet the patients were unable to excrete chloride, and after its administration retained water. Apparently Austin and Pepper's case is of the same type. This shows from another point of view that more than one kind of test must be made to estimate the total renal function.

The author affirms that considerable evidence is at hand to show that certain manifestations of renal insufficiency are produced by retention of acids in the body, with a consequent acidosis. He believes tests for renal function in Bright's disease are valuable aids in diagnosis, prognosis, and treatment.

Stress is laid on the lactose, salt water, potassium iodide, and nitrogen tests in the early diagnosis of nephritis; in the advanced cases the phthalein test is most satisfactory. The non-protein nitrogen of the blood offers additional information in regard to the faulty eliminative powers on the part of the kidney, and yet cases occur in which both blood-nitrogen and phthalein are normal. Chloride retention is an important factor in the disease.

The conclusions are that the study of renal function in advanced nephritis is a complex question and that no one test alone is conclusive, but that dietetic measures may be more rationally prescribed if functional efficiency of the kidney is studied care-A. C. STOKES. fully.

Jones, W. C.: Experimental Ligation of One Ureter: Application of Results to Clinical Gynecology. Am. J. Obst., N. Y., 1914, lxx, 329.

By Surg., Gynec. & Obst.

After an extensive discussion of the subject the author reaches the following conclusions:

1. During the first ten days after complete ureteral obstruction in dogs, the gross changes are not marked, a slight hydronephrosis being practically the only lesion found.

2. From the tenth to about the sixtieth day constitutes a period of hydronephrosis, during which

no general atrophies are found.

3. At the expiration of about two months the kidneys are divided into two groups: (1) those that continue to enlarge, and (2) those which undergo general diminution in size.

4. More or less gross evidence of intrarenal infection is almost constant after the tenth day. It seems that the less the infection the more marked is

the general renal shrinkage.

5. Perirenal anastomoses do not seem to favor the development of hydronephrosis, for adhesions were much more marked in the atrophy series than in the large hydro- and pyonephroses.

6. There is considerable evidence that low ligations are much more prone to be followed by atrophy

than are those near the kidney.

7. As far as it has been possible to ascertain, young dogs seem more liable to infection and consequent cystonephrosis than old ones.

8. In most instances the intra-ureteral pressure

was not high in the ureterorenal cystoses.

o. If as much care is exercised in dog surgery as in human surgery, neither the morbidity nor the mortality of sudden complete ureteral obstruction is high, especially if severe infection can be avoided.

In the human, the following points are worthy of particular mention from a clinical standpoint:

1. The ureter is injured probably in from 1 to 3 per cent of all intraperitoneal operations upon the female pelvic organs. This accident is more common by the vaginal than by the abdominal route.

2. The causes of these injuries are: (1) displacement or intimate involvement of the ureter by pathological structures in the pelvis, especially uterine and ovarian tumors; (2) congenital abnormalities; and (3) lack of care by the operator.

3. The different kinds of ureteral injuries, stated approximately in the order of the frequency of their occurrence, are: (1) ligation, (2) clamping, (3) kinking (these three usually produce complete occlusion), (4) incision, (5) resection, and (6) destruction of blood supply. Complete obstruction may lead to the following results, named approximately in the order of their seriousness: Local—(a) infection— 15 per cent, (b) fistula-24 per cent, (c) hydronephrosis-80 per cent, (d) general renal atrophy -less than 20 per cent in Barney's series. General-(e) toxemia—very rare, (f) anuria—1.6 per cent, (g) no symptoms—21 per cent. The mortality of unilateral ureteral obstruction is 18 per cent.

4. In the diagnosis of ureteral obstruction, the most important means is the ureteral catheter.

The prevention of injury to the ureter usually may be accomplished by a careful unraveling of the pathological anatomy in each case, beginning high up where the conditions are normal and where the ureter is easily found. Too much reliance must not be placed on normal anatomy. In ligating pelvic vessels, each one should be isolated before tying. Above all, the surgeon must realize the imminence of the danger—that injury to this duct together with hæmorrhage constitutes the chief danger of

hysterectomy.

6. Intentional ligation of the ureter may be indicated in irreparable injuries to this duct, in order to get rid of the kidney functionally. In these cases the procedure replaces immediate nephrectomy. The kidney may be removed later, if necessary; but if no serious symptoms arise, nothing further need be done. Even though it is technically possible to repair the ureter, the patient's condition may not allow prolongation of the operation. In this instance the ligation is a strictly temporary measure to be followed by an early secondary operation for the restoration of the ureteral lumen, before the function of the kidney becomes seriously impaired. This procedure has been used by a goodly number of leading gynecologists, and holds excellent promise of becoming an established procedure in selected N. S. HEANEY. cases.

#### BLADDER, URETHRA, AND PENIS

Tumors of the Bladder (Blasen-Hildebrand: Deutsche Gesellsch. f. Chir., 1914. tumoren). By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Uniformity in treatment has not yet been attained and the operative mortality is still too high. In carcinoma it is about 30 per cent. In carcinoma there is still considerable difference of opinion as to what method of operation is best. The methods in use are extirpation of the tumor through the bladder after high section, resection of the tumor with a piece of the bladder, and total extirpation of the bladder. A series of cases given shows the severity of the operation and the high operative mortality. No marked improvement in results can yet be reported; permanent recovery practically never occurs. This is explained by the fact that radical operation is only undertaken in the severest cases.

The dangers of operation are peritonitis and phlegmon of the connective tissue, both caused by the infiltration of urine. Attempts have been made to overcome this danger by discharging the urine either through a temporary kidney fistula or by implantation of the ureters in the skin or the intestine. The latter methods should not be used. The lymph-glands are taken into consideration far too little. It has been incorrectly asserted that these are practically never involved in cancer of the bladder.

Hildebrand's experience, as well as the autopsy

reports at the Charité show that the lymph-glands are involved in a high percentage of the cases. be sure, lymph-tracts have not been demonstrated with certainty in the mucous membrane of the bladder; but the muscular coat shows numerous lymph-vessels. They conduct the lymph, as Hildebrand shows in detail, to certain lymph-glands lying at great distances from one another. Therefore, if these were removed it would complicate the operation considerably, and would demand the opening of the peritoneum in different places. This would increase the operative mortality too much. On the other hand, improvement in the prognosis cannot be expected without removal of the lymph-glands. In papillomata the methods are intravesical removal and high section. The intravesical method would be preferable if malignant cases could be distinguished from benign ones with certainty by macroscopic examination. But, as von Frisch has shown in a report of more than 200 cases, 50 per cent of the papillomata have carcinomatous inclusions in the pedicle or in the lymph-tracts. Therefore, a certain diagnosis cannot be made if intravesical methods are used. All cases must be treated as if they were carcinoma: not only must the tumor be removed, but the base on which it rests. Frisch himself has adopted high section, a method of operation that gives 8 to 9 per cent mortality.

KATZENSTEIN.

Casper, L.: Tumors of the Bladder (Über Harnblasengeschwülste). Med. Klin., Berl., 1914, x, By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author discusses the pathology and symptomatology of tumors of the bladder and maintains that any hæmorrhage from the urinary tract demands immediate cystoscopy. Radium may be used therapeutically in malignant tumors. Of three cases so treated, 2 were unfavorably influenced because of quick absorption of the tumor tissue or rapid growth of the tumor; one almost entirely disappeared.

Definite judgment cannot yet be passed as to the value of radium, and all operable malignant tumors should still be operated on. In benign tumors the intravesical method should be used, as it is without danger and there are few recurrences after it, while after sectio alta, a benign papilloma is often changed

into a malignant papillomatosis.

Treatment with the high-frequency current is most effective; the part of the tumor touched with the head of the sound is coagulated without bleeding. Large benign tumors should first be removed with the loop and the stump then treated with the high-frequency current.

Uhle, A. A.: The Treatment of Bladder Papilloma by High-Frequency Destruction. Ann. Surg., Phila., 1914, lx, 319. By Surg., Gynec. & Obst.

The paper embraces reports and histories of eight The author quotes Beer, who was the first to employ this method successfully in the treatment

of bladder papilloma. Various terms have been applied to this form of treatment: viz., fulguration, desiccation, high-frequency cauterization, and thermocoagulation. The currents applied are either Oudin or d'Arsonval.

The first four cases were completely cured. The fifth was suggestive of malignancy and after treatment the patient disappeared from observation.

The sixth case received, in all, 21 applications made at intervals of a few days. Two weeks after the last treatment there was no evidence of the tumors. This case is still under observation.

The seventh case is still under treatment and the

diagnosis is still in doubt.

The diagnosis of the eighth case was carcinoma of

the bladder.

The author believes that high-frequency destruction of benign growths of the bladder is a very effective method of treatment, even when the bladder is extensively involved. In regard to the use of this form of treatment in malignant tumors, he believes that the immediate effects are apparently good, as shown by the diminution of the growth and the cessation of the hæmorrhage, but that a cure should not be expected.

Herman L. Kretschmer.

# Morton, C. A.: Excision of the Bladder for Malignant Disease. Brit. M. J., 1914, i, 1224. By Surg., Gynec. & Obst.

Morton believes that when a surgeon makes a suprapubic examination of the bladder in cases in which a growth is seen with the cystoscope or suspected to be present from the symptoms, he must be prepared to excise the portion of the bladder wall which is infiltrated by a malignant growth, or if extensively involved to completely remove the bladder. He records four cases: in one, there was complete excision of the bladder for extensive epithelioma; in three, the bladder was partially

resected for malignant disease.

In the first case the history pointed to an enlarged prostate with cystitis. On exploration by the suprapubic route, almost the entire wall of the bladder was found to be infiltrated by an ulcerating growth. The bladder was drained for a fortnight, when a ureterostomy was performed. A loin incision was made in each side, the ureters divided low down, the distal ends tied, and the proximal ends in which the catheters were tied were brought out and sutured to the angles of the wounds; from the catheters the urine was carried away by rubber tubes. Two weeks later the entire bladder was removed and the bladder cavity packed with iodoform gauze through the suprapubic drainage tube opening. The granulations around the opening and the abdominal skin were carefully prepared, and through a perineal incision the prostate and rectum were separated. With the patient in the Trendelenburg position, an incision was made around the drainage tube opening, and the skin edges sewed together over the opening. The abdomen was opened, the intestines packed back, the bladder

separated from the symphisis, the peritoneum covering the posterior surface of the bladder was divided half an inch from its reflection on the bladder and left on its posterior surface. The bladder was then tied off in strands from the pelvic wall, the ureters were dragged down, the urethra divided, and strands of tissue passing from the sides of the rectum to the lateral walls of the pelvis were clamped and divided. The area from which the viscus was removed was packed with gauze, and the abdominal wound closed; a considerable gap still existed in the peritoneum, through which the intestines came in contact with the packing. A drainage tube was placed in the perineal wound. No serious symptoms followed the operation. The packing was removed on the fifth day through the abdominal wound and a drainage tube put in. The patient was in bed for five weeks. Rubber receptacles were fitted to the loin to collect the urine and, with a tube passing through the sinus from symphisis to perineum, the patient left the hospital eight weeks after the last operation. Six months later the patient died of melæna. There had been no recurrence.

The second case was a man, aged 50, with pain at the end of the penis, with micturition and passage of "spots" of blood with the urine, and frequency of micturition. Cystoscopic examination failed on account of blood in the bladder. The bladder was opened by suprapubic incision, and a growth the size of a five-shilling piece was found attached to the junction of the posterior surface and the base just behind the trigone. The growth was not villous, but firm with an ulcerated surface. By passing ureteral catheters it was found that the portion of the bladder wall on which the tumor was growing could be removed without injuring the ureters. This was done, taking with the growth about one inch of bladder wall all the way around, except near the ureters, where this was not possible. There was no difficulty in dealing with the hæmorrhage. The gap in the bladder wall was closed by No. 1 forty-day catgut. The ureteral catheters were brought out through the urethra, and the bladder was packed with iodoform gauze. peritoneum was brought together from the abdominal aspect, the temporary abdominal packing was removed, and after iodoform gauze was packed against the abdominal aspect of the bladder the abdominal incision was closed. The gauze was removed from the peritoneal cavity and the bladder on the following day and a tube passed posterior to the sutured bladder wall. The ureteral catheters were removed in six days and then the urine drawn off by Cathcart's apparatus. Sixteen days after operation the tube was removed and the urine passed through the urethra. Seven weeks after the operation the wound was healed; the patient could hold urine for one hour and a half; the urine was clear and he had no pain. He is well and working two years after the operation. The growth was an epithelioma invading the muscles, but not the peritoneum.

The third case, a man aged 56 years, passed a small clot of blood two months before admission and continued to pass clots until six days before admission, when he began to pass blood-stained urine. He had pain in the suprapubic region after micturition. Attempts to pass the cystoscope failed; the prostate felt normal; palpatation over the pubes

revealed a swelling.

The bladder was explored by suprapubic incision and a hard tumor the size of a small hen's egg was shown to be growing from the bladder, just above the urethra; on each side close to it was a firm nodule one-eighth inch in diameter. There were also two papillomata on the bladder wall, one on the left of the tumor and one at the base posterior to the trigone. The latter, one inch by one and one-half inches in size, was dissected away. The other was removed with the growth which was excised together with the bladder wall one-half inch beyond the growth—the excised portion contained the roof but not the floor of the prostatic urethra; the space behind the pubes was packed with gauze and a large drainage tube put into the bladder.

The growth proved to be a glandular carcinoma. There were no serious symptoms, and three months later the wound was healed and the patient could pass urine without pain or difficulty. He returned one year later with painful micturition and blood in the urine. It was impossible to pass the cystoscope and he declined further operation. He has not

been heard of since.

The fourth case was a male, aged 65, who for three months had had hæmaturia, pain at the end of the penis with micturition, pain later on being felt in the perineum. Cystoscopic examination was impossible owing to the presence of blood. A suprapubic incision was made and inside the bladder was found a growth the size of a small orange projecting from the posterior wall near the base. It was soft and friable and mixed with clot. The growth together with a portion of the bladder wall was removed without opening the peritoneal cavity. The gap in the bladder wall was closed with catgut, and the suprapubic opening was closed around a large tube. Six weeks later the patient left the hospital free of pain and hæmaturia, but two months after there was return of hæmaturia and a recurrence of the growth.

The author thinks that in cases of extensive malignant disease of the bladder, as in Case 1, complete excision is the only procedure, and while the risk is great, and the tendency to recurrence considerable — that has been the case — when extensive operations have first been undertaken for malignant disease elsewhere, and after further experience, the operative results have improved. He thinks the mortality of complete cystectomy will be reduced if a preliminary operation is performed to establish a bilateral urinary fistula. He thinks that where partial resection is possible, it is preferable to complete excision, but he feels that if the growth is situated in the trigone region or above, but close to the urethra, complete cystectomy would be better. The question of how to deal with the ureters requires very careful consideration. In the female it is best to implant them in the vagina. In the male, the method used in Case I is best.

In performing complete cystectomy Morton thinks it a great advantage to make a separation between the prostate and rectum before undertaking the abdominal part of the operation. He is careful to prevent the escape of any fluid from the cut urethra by clamping, and from the bladder incision by packing and suturing the incision. Where the growth does not involve the posterior wall, he advises an extraperitoneal operation by peeling off the peritoneum, but if the posterior wall is involved wide removal of the peritoneum is advised.

The toilet of the peritoneum and the drainage of the wound and bladder in cases of partial resection are carefully considered. W. A. CERSWELL.

Keyes, Jr., E. L.: Carbolic Instillation in the Treatment of Bladder Tuberculosis. N. Y. M. J., 1914, c, 449. By Surg., Gynec. & Obst.

While nephrectomy is the essential part of the treatment of tuberculosis of the bladder, and many cases get well without any additional procedure, there are a certain number of cases in which the bladder lesions persist until relieved by local applications.

Three principles must be recognized in the treatment of such cases: (1) An instrument must not enter the bladder—a relative prohibition. (2) The bladder must not be distended—an absolute prohibition. (3) The injection must give relief in proportion to the pain it inflicts-also absolute.

The best preparations for application to a tuberculous bladder are thallin sulphate-3 per cent to 20 per cent,—gomenol, bichloride of mercury—1:20,000 to 1:500, used as an instillation,—and carbolic acid.

This last-named drug may be used in solutions of from 1:200 to 1:20, 5 to 10 drops of it being instilled into the posterior urethra, and allowed to flow back into the bladder. The author has found this treatment the most effective. In two obstinate cases he injected with benefit one or two minims of a 50 per cent emulsion, formed by drawing a few minims of phenol and then an equal quantity of water into the syringe. S. W. Moorhead.

Randall, A.: Polyps of the Male Urethra. Ann. Surg., Phila., 1914, lx, 325.

By Surg., Gynec. & Obst.

The author urges the use of the endoscope to cure up obscure symptoms in chronic urethritis, and reports 14 cases of polyps of the male urethra which otherwise would not have been recognized.

Irritation probably plays an important rôle in their formation, although it is not necessarily due to gonorrhea. The author's examination of specimens shows his cases may be classed in 3 groups: benign fibrous polyps, 7 cases; benign villous polyps, 2 cases; benign glandular polyps, 5 cases.

The symptoms presented by these patients were: (1) discharge, generally mucoid and only present when the polyp was in the anterior urethra; (2) hæmorrhage in but one case; (3) pain, reflex and referred, of varying types; and (4) various disturbances in the sexual sphere in cases of polyps situated in the posterior urethra.

The method of treatment consisted in the removal of the polyp through a plain air endoscope by means of a snare or ronguer, followed by cauterization of

its base.

Harpster, C. M.: Rupture of the Urethra Following Fracture of the Pelvis. Ohio St. M. J., 1914, x, 531. By Surg., Gynec. & Obst.

H. L. SANFORD.

The author reports personal cases and concludes that in severe crushing injuries of the pelvis complicated by rupture of the bladder or urethra, the urine should always be diverted either by suprapubic cystotomy, or in cases of low rupture of the urethra by perineal urethrotomy. This relieves the urgent symptoms, prevents urinary infiltration, and puts the urethra at rest. In cases of shock or hæmorrhage, repair of the ruptured urethra should be postponed.

H. L. Sanford.

#### GENITAL ORGANS

Butt, A. P., and Arkin, A.: Malignant Disease of the Retained Testicle. Surg., Gynec. & Obst., 1914, xix, 419. By Surg., Gynec. & Obst.

The authors report a case of double undescended testicle with tumor formation. The patient, a farmer aged 48, had led a vigorous sexual life until recently. His health had been failing for a year. He was troubled with gastric disturbances; his abdomen had enlarged noticeably for the past six months. Examination showed a man of slight build, with scant moustache, practically no beard, voice of feminine type. His scrotum was small, penis undersized, and no testicles were found in the scrotum. A large, hard, smooth mass was palpable in the left lower abdomen. Upon operation a tumor weighing three and one-half pounds was removed from the left side. The right testicle was removed from the lower part of the pelvis. Microscopic examination of the tumor showed it to be a sarcocarcinoma of double undescended testicles. The carcinomatous portion predominated, and the connective tissue showed evidence of sarcomatous proliferation with large numbers of small round-cells. In addition, giant-cells were scattered through the tumor, making it an unusual one. Lymphoid follicles were present, and the mixed tumor had involved both undescended testicles.

Turner, P.: The Treatment of the Imperfectly Descended Testicle. Guy's Hasp. Gaz., 1914, xxviii, 359. By Surg., Gynec. & Obst.

After a brief general review of the pathology of undescended testicle, the writer sets forth a modification of the ordinary technique of orchidopexy which he has used during the past year with good results. The final results of orchidopexy are uniformly unsatisfactory, chiefly on account of the absence of any continuous natural force tending to hold the testicle in its new position; of damage to the testicle caused by the passage of sutures; of operative damage to the blood supply; and, finally, of the insufficient development of the scrotum on the affected side, which does not allow of preparing a satisfactory bed for the organ.

Turner proposes to transplant the testicle to the opposite side of the scrotum through a small opening in the septum. The technique needs no detailed description. No fixation sutures are required, as the small hole in the septum quickly contracts after the testicle has been drawn through. Again, any attempts to resume its former position are counteracted by the resistance of the septum which supplies the necessary continuous gentle traction. When the condition is bilateral two operations are necessary at an interval of about two or three months.

FAXTON E. GARDNER.

Jouet, F.: Two Cases of Extirpation of the Vas and Vesicle for Genito-Urinary Tuberculosis. Am. J. Urol., 1914, x, 395. By Surg., Gynec. & Obst.

Both of the cases cited were operated upon by the inguinal route; one had a residual sinus, the other was discovered to have a tuberculous condition of the opposite vesicle and of the prostate three weeks after the operation.

The author does not advocate vesiculectomy as a routine procedure, but cites the following indications: (1) Vesical disturbances and fistulæ due to vesicular lesions; (2) rectal obstruction from perivesiculitis; (3) large vesicles on the point of suppuration, after conservative measures have been tried in vain; (4) bad general health of the patient depending on the tuberculous lesions of the genital organs; (5) the presence of two diseased vesicles and one healthy testicle.

Contra-indications are tuberculous lesions of the urinary tract, distinct pulmonary lesions, and a bad physical condition resulting from a cause other than the genital lesion. In the majority of cases vaso-epididymectomy alone is indicated.

S. W. MOORHEAD.

Thomas, B. A., and Pancoast, H. K.: Seminal Vesiculitis. Ann. Surg., Phila., 1914, lx, 313.

By Surg., Gynec. & Obst.

An appeal is made to the profession to recognize the many symptoms which may arise from chronic inflammation of the seminal vesicles, and which are too frequently overlooked, especially in the hands of neurologists, orthopedists, and internists. Special reference is made to the vast array of conditions: a symptom-complex too little understood, such as acute synovitis, and arthritis of an infectious or toxic nature, so-called articular and even muscular rheumatism, arthritis deformans, gout, hypertrophic arthritis, chronic bladder disturbances, recurrent

epididymitis, impotency, renal and cardiac complications, digestive disturbances, and a number of mental and nervous manifestations almost incredible of belief.

The authors lay special stress upon the fact that most infections of the seminal vesicles, if not all, are of mixed variety. They confirm the suspicion by pathological examination of the inflammatory products obtained by massage of these organs. Among the bacteria harbored in chronic seminal vesiculitis that have been repeatedly demonstrated may be named the gonococcus, various strains of the streptococcus, pneumococci, staphylococci, colon bacilli, corynebacteria, and tubercle bacilli. Clinicians should readily appreciate the significance of such bacterial foci.

So far as systemic infections are concerned, in comparison with the tonsil, in the light of clinical experience and specific treatment, it would seem that the greater evil rests with the seminal vesicles.

In summarizing, the authors state that experienced massage will, in the majority of cases, effect a cure in due time. In many, however, massage often proves ineffectual. Convalescence may be accelerated by vasopuncture, vasostomy, and direct manipulation of the seminal vesicles. In certain cases—not so few as may be imagined—seminal vesiculotomy or vesiculectomy should and must be performed if the patients are to be cured or relieved of their annoying symptoms.

IRVIN S. KOLL.

Hyman, A., and Jaches, L.: The Röntgenographic Diagnosis of Prostatic Enlargement by Means of Air Inflation of the Bladder. Surg., Gynec. & Obst., 1914, xix, 407. By Surg., Gynec. & Obst.

The authors call attention to a method which may at times be of considerable value in the differential diagnosis of prostatic enlargement when cystoscopy cannot be employed. While cystoscopy is the preferable procedure whenever feasible, it is well known that in many cases it cannot be performed on account of a pronounced median lobe outgrowth, or on account of a stricture of the urethra. It may be inadvisable in debilitated subjects with infected bladders, owing to the danger of sepsis.

The method suggested by the authors is very simple. The bladder is first emptied, then a small sized catheter is introduced, to which is attached an ordinary rubber hand bulb. The bladder is gently inflated until the patient complains of a sense of full-The catheter is then withdrawn, and the urethra clamped. The plate and X-ray tube should be adjusted before the inflation. The patient is placed in the ventrodorsal position, and a compression diaphragm six and one-half inches in diameter is lightly applied in such a direction that it brings the focus of the tube about three inches above the symphysis pubis at an angle of eighty degrees with the plate. The radiographs show the prostatic shadows within the bladder very distinctly. Operation in three of the cases confirmed the radiographic findings.

McGrath, B. F.: Cancer of the Prostate. J. Am. M.
Ass., 1914, lxiii, 1012. By Surg., Gynec. & Obst.

McGrath begins with the hypothesis that the cells of cancer are the direct outspring of cells normally present in the acinus and that they are derived neither from the definite cells through metaplasia, nor from prenatal or postnatal rests.

The author tries to establish the same proposition for cancer of the prostate that MacCarty did for cancer of the breast. MacCarty's conclusion was that the cancerous cells of the mammary glands are the direct immediate descendants of the undivided cells of the germative layer and that the hypothesis of embryonic rests is not essential for the explanation of cancer in this organ. In following out this hypothesis the following observations were made:

The normal acinus of the prostate is lined with a single or an imperfect double layer of columnar These are the differentiated or epithelial cells. specific functional cells of the gland. In the examination of the pathologic specimens, these functional cells are frequently seen in a state of excessive proliferation, forming projections in and bridges across the acini. There is also observed partial or complete exfoliation of the same cells with the formation of cysts, which are empty or contain accumulations of the cells in varying degrees of degeneration. Some fields are noted where the acini present not only the proliferated functional cells, but also, outside these and immediately adjoining the stroma, another row of cells which is morphologically dissimilar to the inner row of differentiated cells. Other fields contain acini with functional cells, present. exfoliated, or absent, and the lumina partially or completely filled with the hyperplastic undifferentiated cells of the outer row. Still other fields are seen in which these hyperplastic cells of the outer row are both intra-acinic and extra-acinic, consequently presenting epithelial invasion of tissue, the accepted picture of cancer. Furthermore, an impressive point is that the three conditions just described have been observed together in the same microscopic field.

Metastasis occurs in bones, lymphatics, and internal organs. Internal metastases are usually large, even those from small prostatic cancers.

In one hundred collected cases Kaufmann found the pelvic gland involved 27 times, the iliac 24, and the inguinal 16. Young thinks this demonstrates the fact that the diagnosis of enlarged glands should not be accepted before a diagnosis of carcinoma of the prostate is made. Blumer states that the prostate metastasizes into the bones most frequently.

The author's conclusions are as follows:

An analogy exists between the microscopic fields of epithelial changes observed in cancer of the prostate and those of the mammary glands, as presented by MacCarty.

Cancer of the prostate is a comparatively frequent disease in men over 50 years of age. The process usually begins in the posterior lobe and presents itself more commonly as a small nodule of slow growth; consequently, careful investigation of the posterior

lobe, gross serial sections of the specimen with microscopic examination of doubtful areas, are essential for diagnosis in the majority of cases.

The fascial strata associated with the prostate seem to be quite effective barriers to the progress of

The tendency of extension of the cancerous process is upward to the region defined by the fascia of Desnonvillers posteriorly and the trigone anteriorly, and then beyond this area. A. C. STOKES.

#### MISCELLANEOUS

Hadden, D.: Bacteriological Findings in the Urine in Cases Associated with Urine Stasis. Tr. Am. Ass. Obst. & Gynec., Buffalo, 1914, Sept. By Surg., Gynec. & Obst.

Clinical and experimental data show that bacteria are eliminated in the urine and, consequently, the simple presence of a bacteriuria is not diagnostic of

urinary tract infection.

The normal urine has some germicidal action which, however, is readily destroyed. When the character of the urine is altered it becomes a good culture medium. Both factors must be considered in making cultures. So far, the majority of writers claim that normal urine is sterile.

Interference with drainage is essential for the production of most chronic infections of the bladder and kidneys, since acute infections respond readily to

treatment when the flow is normal.

Based on the bacteriological findings of the urine,

- the kidney ptosis is divided into four varieties:

  1. The "unilateral nephritis"—a misnomer since there is no Bright's disease—due to an infection imposed on a displaced organ whose drainage is
- 2. The kidney associated with Dietl's crises, or fainting attacks, in which the question of anaphylaxis may have some bearing.
- 3. The ordinary ptosis, a class where the bacteriological findings reported are of marked significance.
  - 4. The class embracing the mobile kidneys that

give no symptoms and show sterile urine.

The 65 cases investigated lead to the conclusion that urine with a small number of bacteria to each cubic centimeter must be considered normal. To obtain results of value a quantitative determination was employed.

Mysch, W. M.: Origin of Phosphaturia (Zur Frage der Entstehung der Phosphaturie). Sibirsk. Vrach. Gaz., 1914, i, 243.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author previously published three cases of nephritis dolorosa, and he now adds another which is of special interest because it was associated with

unilateral phosphaturia.

A 40-year-old man had been suffering for 8 months from attacks of pain in the left lumbar region, irradiating to the left inguinal region and back. The pains grew more frequent and more severe, and three months before admission, after a particularly severe attack, a small stone was discharged. Recently the attacks had occurred daily. The urine was sometimes quite clear, but after the attacks was turbid. On admission the left kidney region was sensitive on percussion; the urine was turbid, neutral, and without albumin; in the sediment were many amorphous phosphates, some triple phosphates, but no casts. Röntgen examination was negative. Cystoscopy was impossible on account of stricture of the urethra. There was uncertainty as to whether a diagnosis of kidney-stone or nephritis dolorosa should be made.

On operation extensive adhesions were found between the fatty capsule and the true capsule, and on the latter, in places, there were white cicatricial flecks. No stone was found. Decapsulation was performed without difficulty, after which the pain stopped, the amount of urine increased, and the phosphates disappeared. Examination of a piece excised from the cortex showed the picture of beginning parenchymatous nephritis. A few months later the patient had a fall on the left side and the old pains returned. After ten months he came to the hospital again. There were the same symptoms as before the operation, in addition to which there was pain occasionally in the region of the right kidney. Bougies were introduced until cystoscopy and catheterization of the ureters could be performed, and this showed that the urine from the left kidney showed abundant amorphous phosphates, while that of the right kidney contained very few.

The author thinks this case confirms Albarran and Schlagintweit's opinion that a unilateral phosphaturia is possible, as well as a unilateral albuminuria or hæmaturia. He thinks there was a close relation between the phosphaturia and the nephritic changes in the kidney, and that the phosphaturia was the result of the deranged function of the pathological kidney tissue. The following conclusions are reached:

1. There is such a thing as a unilateral phosphaturia, and in a bilateral one the amount of phosphates may vary in the two kidneys.

2. Some cases of phosphaturia are due to nephri-

tic changes in the kidney.

3. Such cases tend to unite nephritis dolorosa and nephrolithiasis as different clinical manifestations of the same pathological anatomical substratum.

RIESENKAMPFF.

## SURGERY OF THE EYE AND EAR

EYE

Krusius, F. F.: Transplantation of Living Hairs to Form Eyelashes (Über die Einpflanzung lebender Haare zur Wimpernbildung). Deutsche med. Wchnschr., 1914, xl, 958.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The hairs used for transplantation should preferably be taken from the patient himself. They must be strong, not too old, individual hairs from the head or the eyebrows, or axillary or pubic hair may be used. The hairs are removed by Kromayer's method with a tube-shaped trephine with a lumen of 1.5 mm. The transplant is washed in salt solution and then placed in a curved hollow needle. Under local anæsthesia the needle is pushed in 2 to 3 cm. from the edge of the lid and brought out at the edge of the lid. While the hair is held firm the needle is drawn out. Fifty hairs are enough to replace a whole eyelash, and twenty can be transplanted at one sitting. The results of this method are good from every point of view.

VON TAPPEINER.

Holmes, E. M.: Intranasal Operation for the Relief of Nasolachrymal Stenosis. Ann. Otol., Rhinol. & Laryngol., 1914, xxiii, 286.

By Surg., Gynec. & Obst.

Holmes reviews the anatomy of the lachrymal apparatus, drawing attention to the surgical anatomical fact that the medial wall of the upper portion of the nasolachrymal duct is the lateral wall of the anterior portion of the middle nasal fossa, and that this wall is very thin. He conceived the idea of making an artificial opening through this wall in cases of nasolachrymal stenosis, where obstruction is marked and symptoms are distressing and are not relieved by probing.

A series of 8 cases are reported. Of the first 3, only one was successful, owing to cicatricial closure of the artificial opening. This led to the use of a mucous membrane V-shaped flap at the seat of operation, which was turned up under itself in an effort to prevent subsequent closure. Of 5 cases thus operated upon, 3 were successful, one moderately successful, and one was a failure.

W. G. REEDER.

Schweinitz, G. E. de: Psammosarcoma of the Orbit in a Girl of Thirteen; Successful Removal with Preservation of the Eyeball and Its Functions. Arch. Ophth., 1914, xliii, 469.

By Surg., Gynec. & Obst.

Examination showed a tumor-like mass protruding from the upper and inner part of the left orbit; the trouble was of two and one-half years' standing. There was no history of trauma or acute illness. As the tumor increased in size the eyeball was pushed down and outwards. There was diplopia or loss of vision. The vision of each eye was 6/5.

X-ray examination showed frontal sinuses on the left side obliterated as far as the midline by pressure from the new-growth. Frontal and ethmoidal sinuses themselves apparently were not involved.

Operation revealed a cystlike cavity, its bony capsule being apparently complete and about 4 mm. thick. The cavity contained a mass of tissue which in consistence and color suggested brain tissue; it also contained a small amount of clear fluid.

Microscopic examination of the tumor mass showed a very cellular tissue in which were imbedded enormous numbers of refractile bodies. Treated with sulphuric acid these bodies dissolved and formed crystals of calcium sulphate. The tissue was well vascularized, the vessel walls being surrounded by cells of the tumor in many instances. The cells were similar to those seen in sarcoma and, owing to the presence of enormous numbers of these so-called sand bodies, a diagnosis of psammosarcoma was made.

According to Adami, psammomata are practically always of endothelial origin and are due to localized overgrowth of the capillary endothelium. This whorl-like arrangement of cells often degenerates, and calcareous salts are deposited in these degenerated areas. To this sort of tumor the name psammoma is applied.

Lamb, R. S.: External Canthotomy. Ophth. Rec., 1914, xxiii, 437. By Surg., Gynec. & Obst.

This classical operation of enlarging the palpebral aperture is adopted as a procedure by Lamb. He pleads for the frequent and more general use of this well-known operation. The reasons for this procedure are:

1. By the hoelike action of the margin of the lids,

ordinary foreign bodies are removed.

2. That desquamated cells are foreign bodies and are removed by this hoelike action. Canthotomy removes the drawback to healing in ulcers. Relief in ophthalmia gonorrhœal or in Parinaud's disease is obtained by this operation. Numerous cases have been investigated.

External canthotomy has proved, in the author's experience, a distinct advantage and advance over any other procedure in connection with the treatment of corneal ulcer. This operation is performed in the earlier stages, and not as a last resort. In conclusion, he states that since he has adopted this

procedure he has not found an ulcer that has not been benefited by it. He lays special emphasis upon the fact that external canthotomy should be used as a first, and not as a last, resort. T. J. DIMITRY.

Weeks, J. E.: A Case of Symmetrical Occlusion of the Pupils by the Development of Cysts and Small Solid Masses from the Uveal Layer of the Iris. Arch. Ophth., 1914, xliii, 483.

By Surg., Gynec. & Obst.

The case reported showed V.R.E., 20/50; L.E. perception of light. Each pupil is occluded by small pigmented spherical masses varying in size. A small opening in the pupillary space of R.E. permits vision of 20/50. A diagnosis of cysts of the uveal layer of the iris was made. Operation, which consisted of a detachment of small masses in the pupillary space plus a liberal iridectomy, gave the following result with correcting glasses: R.E.. 20/20-; L. E. 20/20.

Microscopic examination showed a development of cysts in the pigment layer of the iris. In addition there appeared to be an hypertrophy of the iris at its pupillary margin. There was also an increase in the size and number of the blood-vessels.

Cysts of the pigment layer of the iris can be divided into (1) congenital, (2) traumatic, and (3)

secondary to diseases of the eye.

The congenital cystic type presents some distinctive features; viz., (1) it is usually bilateral; (2) development is slowly progressive; (3) evidence of inflammation of the iris is usually wanting.

In certain diseased conditions of the eye, as in glaucoma, or in systemic conditions, as diabetes, cysts of the pigmented layer of the iris are prone to develop.

Weidler, W. B.: Intra-Ocular Sarcoma. N. Y. St. J. Med., 1914, xiv, 445. By Surg., Gynec. & Obst.

At the annual meeting of the New York State Medical Society, Weidler exhibited specimens of an intra-ocular sarcoma accompanied with brief remarks on its course, which he divided into four stages: preglaucomatous, glaucomatous, extra-ocular extension, and metastasis.

The preglaucomatous stage comprises the period of progressive visual defects, and scotomata if the growth resides posterior to the median line of the

The glaucomatous stage was the period of inflammation and increased tension, and was not al-

ways present.

High tension he characterized as a valuable diagnosis in obscure cases with circumscribed retinal detachments, the increase being due to the pressure of tumor on the venæ vorticosæ.

Rupture of the globe is rare and is possibly due to an increased tension from intra-ocular hæmorrhage—the cause is often mistakenly attributed to hæmorrhagic glaucoma.

The section is described as a rupture of the cornea showing the iris and lens extruded together with

parts of the ciliary body and the retina which are completely detached from the globe, the choroid is partly detached with tremendously engorged vessels, and no change is apparent in the nerve. Microscopically, it is a small round-celled growth, very vascular, with evidence of free bleeding in small-sized hæmorrhages, and pigmented in one small part only which came from the ciliary body, giving the growth the type of purest leucosarcoma found.

WALTER W. WATSON.

Biggs, M. H., and Norris, H.: Enucleation of the Eyeball with Implantation of a Gold Ball. South. M. J., 1914, vii, 749.

By Surg., Gyne. & Obst.

The authors refer to the necessity of the general surgeon occasionally removing the eyeball and therefore the need of his being perfected in the technique of at least one such operation. At first performing enucleation only, the authors have recently adopted the Frost-Lang modification with gratifying results in two cases apparently unfavorable for gold-ball implantation. One case, a gun explosion injury with shrinkage of the globe following the extraction of steel, with five months' inflammatory disturbances and cicatricial adhesions before consent to removal was obtained, had a 13 mm. gold ball implanted with entire success, though end-results were adversely affected by partial fixation and shrinkage. In the second case, a knife-blade injury with enucleation in five days while the globe was much inflamed and ruptured during removal, the patient now wears an artificial eye with fair motion.

Frost's method is described with reference to the suturing with catgut first of the muscles and then the conjunctiva. The authors omit the suturing of muscles together, in order that abnormal position of muscles or extrusion of sphere by tension may be prevented. WALTER W. WATSON.

Champlin, H. W.: Prompt Curetting of Keratitic Ulcers. J. Ophth., Otol., & Laryngol., 1914, xx, 327. By Surg., Gynec. & Obst.

The author prefers the curette first and next the red-hot cautery point, but is opposed to the use of strong carbolic or formalin in these cases. Champlin currettes all old granulations and dead tissue and is rewarded by prompt healing. The after-treatment is bichloride of mercury 1:5000, atropin, dionin, and, later, vellow oxide and iodosyl.

GUSTAVUS I. HOGUE.

Guentzer, J. H.: Orbital Abscesses with Optic Neuritis Due to Acute Ethmoiditis in a Child. Laryngoscope, 1914, xxiv, 803.

By Surg., Gynec. & Obst.

Guentzer reports the case of a child 7 years old whose first symptoms were those of orbital cellulitis: viz., swelling of the eyelid, exophthalmos, displacement of the eyeball downward and outward, with restricted rotation. Diplopia was present and the fundus findings were those of optic neuritisV 20/200. The orbital abscess was incised and a day later the ethmoid labyrinth was exenterated by external route. Six weeks later the eye ground had entirely cleared up and vision had returned to normal.

W. G. REEDER.

Nesfield, V. B.: The Clear Pupil after Cataract Extraction. Indian M. Gaz., 1914, xlix, 345.

By Surg., Gynec. & Obst.

Nesfield considers an intact, mobile pupil, following an extracted cataract, of the greatest importance. He bases his opinion on the fact that the natives of India refuse correcting lenses after the Smith extraction because, he believes, the focusing of the rays of light when the pupil is large causes painful dazzling.

To secure a round, active pupil he uses a sclerocorneal incision with the conjunctival flap; then, instead of depending on the corneal shelf to aid in somersaulting the lens or breaking the ligament, he uses a small blunt, smooth hook which is passed around the equator of the lens, and the ligament is ruptured by pulling forward. Delivery is said to be

as easy as in the Smith operation.

Peripheric iridectomy prevents prolapse without interfering with the pupil. Bleeding is controlled by the use of adrenalin chloride 1:1000, followed by the use of sodium citrate 30 gr. and 1 oz. 1 per cent carbolic solution used during the operation to prevent clotting. As a rule there is very much less astigmatism to correct after this procedure than after a Smith corneal incision.

E. B. FOWLER.

Kimball, A. H.: Case of Voluntary Displacement of the Eye. Wash. M. Ann., 1914, xiii, 299. By Surg., Gynec. & Obst.

Kimball cites the case of an adult insane male who could at will dislodge his eye from the socket by manipulating his finger between the globe and orbit, the eye assuming its normal position when released. Frequent toying with the eye had produced blindness and slight proptosis from stretching and atrophy of the optic nerve, but the ocular movements remained normal.

Walter W. Watson.

Parker, W. R.: Report of a Case of Detachment of the Retina, Occurring in a Case of Neuroretinitis, Restored by Scleral Trephining Operation, Associated with Incision of the Choroid and Retina. Arch. Ophth., 1914, xliii, 489. By Surg., Gynec. & Obst.

Parker reports a case of double neuroretinitis of unknown origin, associated with a partial detachment of the retina down and out in the left eye, of one year's duration. The sclera was trephined over the site of detachment and an incision made in the choroid and retina. The operation was followed by a free discharge of a straw-colored fluid, and a small amount of vitreous. A marked reaction followed, the whole bulbar conjunctiva becoming cedematous. After a lapse of ten days the reaction had disappeared and the retina was reattached. There was no recurrence after a period of eight months. Vision before the operation was 4/60—the final record was 6/12.

Francis Lane.

#### EAR

Dench, E. B.: Two Cases of Loss of Caloric Vestibular Reaction, with Operative Findings. Laryngoscope, 1914, xxiv, 792. By Surg., Gynec. & Obst.

The first case was a poorly nourished woman 24 years of age, who had been troubled with deafness and a discharge from the left ear since childhood and for two weeks had been annoyed by dizziness, vomiting, and a tendency to fall backward and to the left side. Upon admission, the caloric test showed an active labyrinth on both sides, but the following day there was no reaction to hot or cold upon the left side.

A radical mastoid operation disclosed a fistula in the horizontal semicircular canal and the oval window was open; consequently a complete labyrinthine extirpation was performed, the labyrinth was drained posteriorly and the cochlea was drained by removing the bone separating the oval and round windows. Recovery was uneventful.

The second case, a boy fourteen years of age, with a history of discharge from the right ear for six months, was admitted complaining of severe pain in the right ear, headache, and dizziness. The caloric test showed both labyrinths were active. Some granulations were removed from the right tympanic cavity and eight hours later the temperature reached ro4°; the caloric test showed the right labyrinth was dead; there was severe pain in the right side of the neck; there was restlessness and meningeal cry, though no other symptoms of meningitis; the cerebrospinal fluid was clear; a blood culture after eighteen hours showed two colonies of streptococci.

A radical mastoid was performed and the lateral sinus found thrombosed, evidently of long duration. After operation the temperature fell, but five days later it rose to 105.8°, and lumbar puncture showed pus, blood, and streptococci present in the cerebrospinal fluid. An exenteration of the labyrinth was performed, the bulb exposed and curetted. The condition improved, but a few hours later the patient died suddenly of pulmonary embolus.

ELLEN J. PATTERSON.

## SURGERY OF THE NOSE, THROAT, AND MOUTH

#### NOSE

Cohen, L.: Correction of External Nasal Deformities by Subcutaneous Method. Maryland M. J., 1914, Ivii, 222. By Surg., Gynec. & Obst.

The author thinks that external deformity of the nose is so frequently accompanied by obstructive changes within the nose that the correction of all these deformities rightly belongs within the domain

of the competent rhinologist.

All operations are done under strict asepsis, and in cases in which the subcutaneous method is employed local anæsthesia is used. He corrects any obstruction to breathing in the nasal cavities at the first operation, and three weeks later by the subcutaneous method modified to suit the case he fractures the nasal bones, removing any excessive bone or cartilage to allow mobilization of the parts. After molding the nose to the desired shape he applies a copper saddle to fit the nose, and packs the nasal cavities with iodoform tape.

ELLEN J. PATTERSON.

Smith, H.: Correction of Nasal Deformities by the Injection of Paraffin. N. Y. St. J. Med., 1914, xiv, 454. By Surg., Gynec. & Obst.

Bad results following the injection of paraffin can be reduced to a minimum by observing certain

precautions.

Under strict asepsis in selected cases, cold sterile paraffin should be injected from above downward away from the orbit—an assistant exercising sufficient digital pressure against the nasal bones and roof of the nose to prevent the entrance of paraffin into any other locality than the one desired. Ice applied locally after the injection prevents the paraffin from wandering into undesirable localities. Too much paraffin should not be injected at one sitting, and two weeks should elapse between injections.

Ellen J. Patterson.

Lutz, S. H.: Surgery of the Maxillary Antrum; External Route. N. Y. St. J. Med., 1914, xiv, 451. By Surg., Gynec. & Obst.

In cases which intranasal treatment fails to cure, the author combines the external and internal operation as follows: Preferably under general anæsthesia, a crescent-shaped incision with points turned upward is made through the periosteum, one-half inch above the free border of the gum, extending from the canine tooth to a point above the first molar. After opening the antrum with a trephine or chisel, the opening is enlarged with a rongeur until the interior of the antrum can be inspected and all necrotic bone removed.

The opening into the nose is made with a large double punch forceps, one blade being introduced into the nose and the other blade into the antrum through the external wound.

Packing is introduced through the radical opening with one end passed into the nose, and the opening

closed with silkworm-gut sutures.

ELLEN J. PATTERSON.

Hurd, L. M.: Surgery of the Maxillary Sinus; Intranasal Route. N. Y. St. J. Med., 1914, xiv, 452. By Surg., Gynec. & Obst.

The author's method of draining the antrum which has given the best results is as follows: After anæsthetizing the nose and antrum with alypin and adrenalin, the inferior turbinate is severed half-way back from its attachment and pushed over against the septum. The naso-antral wall is entered with a chisel and the wall removed as far back and forward as the antrum extends, upward as far as the junction of the inferior turbinate to the antral wall, and downward to the floor. The antrum is then douched out and the inferior turbinate replaced with gauze packing.

ELLEN J. PATTERSON.

#### THROAT

Eves, C. B.: Teratoma of the Pharynx. Laryngoscope, 1914, xxiv, 798. By Surg., Gynec. & Obst.

The case is reported of a child, fourteen months old, who from three weeks of age had had a growth which protruded from the mouth at irregular intervals after vomiting and which was always immediately swallowed, giving rise to no symptoms.

Upon examination after gagging the child, a smooth pinkish pedunculated growth about the size and shape of a child's middle finger was found attached to the right side of the posterior wall behind the upper end of the post-tonsillar pillar. The microscopic examination showed a teratoma.

Teratomata of the pharynx are rare tumors, generally pedunculated, and discovered by their giving rise to symptoms of dyspnæa or dysphagia either at birth or later in life.

ELLEN J. PATTERSON.

Layman, D. W.: Direct Laryngoscopy, Bronchoscopy, and Œsophagoscopy with the Modified Bruning Bronchoscope. J. Ind. St. M. Ass., 1914, vii, 397. By Surg., Gynec. & Obst.

The author describes a complicated bronchoscope, a modification of the Bruning tube, consisting of a common frame with handle, tubular spatula, main tubes, and extension tubes. The tube is lighted indirectly by reflected light with a system of lenses

and a mirror. He thinks every larvngologist should own a working outfit for diagnostic work, although from lack of experience all cannot become

experts in bronchoscopy.

In the discussion the general consensus of opinion was that tube work was a specialty within a specialty and should be sent to the man equipped by experience for the work. ELLEN J. PATTERSON.

#### MOUTH

Van Hook, W.: The Use of the Tongue in Plastics. Chicago M. Recorder, 1914, xxxvi, 478. By Surg., Gynec. & Obst.

The tongue is susceptible of being used in a variety of ways to make good the defects and overcome the mechanical difficulties arising in the course of oral operation. Its mobility, its liberal covering with mucous membrane, the high vitality of its tissues, and the excess of its muscular mass above actual requirements are all of the greatest advantage for this work.

Within the dental arches, plastic requirements pertain to the tongue itself, to the tissue beneath the tongue, and to the palatal and faucial tissues. The body of the tongue can be removed almost completely, leaving only the stump which will still be a useful structure and perform the lingual function sufficiently to meet the requirements of speech

and deglutition.

When portions of the anterior extremity of the tongue are to be removed, the best incision is the V-shaped one; if upon approximation of the cut surfaces it is found that the tongue "buckles up" at the point beyond the V, it is best to excise a small cylindrical mass which will allow a smooth adjustment with catgut sutures.

The excision of a mass from the side of the tongue may be made to yield a long and narrow stump or a short thick one, depending on the direction in which the incisions are made and the line of suture.

In repairing a part of the oral floor, the side of the tongue mass may be longitudinally split by the introduction of the knife through the defect in the oral mucous membrane, and in this way the tongue may be made to spread out to cover the defect, extending if necessary well over to the fixed gingival mucosa.

Defects of faucial and pharyngeal tissue may be repaired by sliding or displacing a part of the tongue until it is spread out over the defect, retaining the

flap by sutures.

The tongue is of great value with its wide mucous membrane sides and broad attachments in closing

defects after the inferior maxilla or the superior dental arch has been partly excised together with a part of the lateral oral wall. In such cases the normal tongue is to be loosened on the affected side with the mucosa and submucous tissue of the oral floor. This loosening must be boldly done. The tongue may be lifted well to the side and its base may be rotated or drawn from the normal side of the mouth and spread out over the lateral oral defect.

Defects produced by removal of part or all of the body of the jaw may be repaired by loosening the mucosa in front of the tongue, freeing the anterior part of that organ, and then carrying the flap and tongue forward for attachment to the lip, leaving no pockets or angles in which food particles

can gather.

The most important practical considerations in all this work lie (1) in the possession of exact knowledge of the distribution of blood-vessels, and (2) the use of large and loose flaps attached to their new site in such a way that the sutures do not cause local death of tissue. H. A. Potts.

Rolleston, H. D.: Persistent Low Arterial Blood-Pressure in Carcinoma of the Tongue with Aylmoid Disease. Lancet, Lond., 1914, clxxxvii, 692. By Surg., Gynec. & Obst.

A case of the above, reported by Rolleston, showed a persistently low blood-pressure of 90, and usually under 75, mm. Hg. The patient, a male, 62 years of age, an accountant in South Africa, was sent to London for radium treatment for inoperable carcinoma of tongue. The specific history was negative. The growth had extended to the left anterior pillar of the There was a slight enlargement of the cervical glands; albumin, specific gravity 1002 to 1022; no casts; the liver and spleen were not enlarged. He died in great pain. The right leg became livid and cold. The necropsy showed carcinomatous growth of the tongue and palate, but no secondary growth in any other part of the body. The right leg showed commencing gangrene. The heart, weighing 8 oz., was small and showed brown atrophy. The intestines, kidneys, spleen, and adrenals were amyloid. The liver was negative to amyloid reaction. The persistent low pressure is accounted for by the general asthenia and the amyloid disease. Ten days before the final collapse, the blood-pressure was 35 mm. Hg., with the normal difference of 30 mm. between the systolic and diastolic pressures.

T. J. DIMITRY.

## PROCEEDINGS OF SOCIETIES

## MISSISSIPPI VALLEY MEDICAL ASSOCIATION

MEETING HELD AT CINCINNATI, OCTOBER 27-29, 1914

Dowden, C. W.: Gastric and Duodenal Ulcer; Etiology, Diagnosis, and Present-Day Treatment. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct. By Surg., Gynec. & Obst.

The author hesitatingly reports a statistical study of 425 cases of gastro-intestinal disturbances, in which a diagnosis of gastric or duodenal ulcer seems warranted, from a thorough examination, including the various laboratory methods and the employment of the röntgen rays. One hundred and seventy cases, or 40 per cent, bore definite relation to some infection, and he concludes that this is the chief etiological factor.

The anamnesis and the röntgenological findings are the most important diagnostic methods, but the various laboratory procedures are valuable aids, particularly for outlining appropriate treatment.

He believes that ulcers pass through a stage which is distinctly medical, and, if diagnosed at this time, are amenable to treatment. Surgical ulcers are those that have involved more than one coat of the gastric mucosa, and they can always be demonstrated on the radiograms. Medical treatment at this time is worse than useless, because the patient mistakes temporary relief for cure and finally suffers one of the several sequelæ, the most frequent and serious of which is carcinoma.

In proof of the theory that pain is not a result of irritation by hydrochloric acid, Dowden cites several cases, and shows röntgenograms, in which all symptoms of ulcer were present, but in which the gastric analysis showed a total absence of hydrochloric acid. That pain is a result of hyperperistalsis and tugging on the peritoneum, he thinks is the more logical conclusion.

He believes a new era is dawning, and that further study will show us that an active ulcer in its early stage is best treated by absolute rest for the stomach by keeping it empty, thus avoiding the possibility of carrying infection per os; controlling painful peristalsis by antispasmodics, preferably atropine; and by rectal feeding until the acute stage has passed. All foci of infection should be removed.

Crile, G. W.: Anoci-Association in Stomach and Gall-Tract Surgery. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct. By Surg., Gynec. & Obst.

The liver is a vital organ, since after its removal animals progressively decline to death—the fatal termination arriving usually within twenty-four hours. Every liver impairment may therefore be

not only a serious handicap but even a menace to life. After apparently successful operations on stomach and biliary passages the prognosis at first may seem promising, but the patient soon begins to decline. The temperature and pulse may be normal but there is obviously a fundamental failure of normal metabolism. Transfusion of blood may carry a starved patient safely through the operation, but the metabolic disturbances soon cause the favorable picture presented at the close of the operation to change. The fatal sequel in these cases is rare, but many patients sail perilously near the rocks.

Certain laboratory experiments gave the author a clue to the explanation of these occasional sequelæ of operations on the gall-bladder and stomach in handicapped patients. These experiments showed that under normal conditions a definite amount of energy is stored in the brain, the adrenals, and the liver. The psychic and physical environment incident to an operation will, of themselves, to some extent diminish these stores of energy and by so much reduce the patient's powers of resistance. If in addition one of those vital organs has itself been attacked by the pathological condition for which relief is sought, the patient's welfare is still further endangered.

Observations of the H-ion concentration of the blood under various conditions have shown that the psychic and physical strain of the operation increases acidity. When acidosis is already present the increased acidity produced by the anæsthetic may be sufficient to overcome the already narrow margin of safety. The ideal treatment of these cases comprises.

r. The pre-operative administration of sodium bicarbonate and glucose and of bromide per rectum. Morphine is contra-indicated if acidosis is present or threatened, since by experiments it has been found that morphine inhibits or postpones the neutralization of the increased acidity produced by the trauma of the operation and by the anæsthetic.

2. Either twilight anæsthesia or a light nitrous oxide-oxygen anæsthesia should be used, since the increase in acidity is proportional to the depth of the

anæsthesia

3. A technique so accurate and so completely anociated by the use of local anæsthetics and gentle manipulations, so that but a small amount of the anæsthetic is needed.

4. As rapid a technique as is consistent with good work, that the period of anæsthesia may be as short as possible.

The clinical record upon which these conclusions are based include the histories of 893 operations on the biliary tract and 331 on the stomach, performed by the author's associates, Bunts and Lower, by the members of the surgical staff at the Lakeside Hospital, and by the author.

Eastman, J.: Colon Stasis. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct.

By Surg., Gynec. & Obst.

It seems fair to say that treatment directed toward the relief of chronic colitis will also affect the attendant ptosis and stasis and likewise the associated plastic peritonitis. Properly performed short-circuiting operations by the improved drainage which they provide, or should provide, relieve chronic colitis and indirectly favorably affect the other factors of stasis, ptosis, and peritonitis. It is well known that the fæces are to a considerable extent made up of epithelial débris of intestinal secretions and of dead and living bacteria, and that these things mixed with food residue under the influence of contractions of the cæcum rise in the ascending colon. But this contraction is not constant. The empty cæcum is in repose; it does not contract. It is awakened only when the small intestine empties its liquid contents into it. It is this irritant which provokes the contractions. If contractions are not produced in this way, the fæces composed of epithelial débris, mucus, and bacteria have no tendency to be evacuated. The colon becomes lazy and atonic and obstipation is increased by antiperistalsis. It is for this reason that ileosigmoidostomy may be said to be falsely conceived. By this operation the liquid contents of the small intestine are not permitted to enter the cæcum to bring about contraction. It is for this reason that Lane, Leriche, and others have been obliged to reoperate after ileosigmoidostomy and deal with an enormous fæcal accumulation in the cæcum and ascending colon. It is clear that typhlosigmoidostomy or typhloproctostomy cannot be open to the above criticisms, for in these operations the fluid contents of the small intestine are permitted to enter the

In a case of simple constipation concerning the left colon only, ileosigmoidostomy may be of some benefit, but it is debatable whether such a condition is not better treated by non-surgical means.

Bergmann first anastomosed the cæcum to the sigmoid for volvulus of the ascending colon, and the operation in cases of stasis is not indicated unless membranes or adhesions so fetter the colon as to make such an exclusion necessary because of incompetency or obstruction. If the colon is obstructed at the hepatic or splenic angles alone, then colocolostomy, as practiced by Payr, which excludes these flexures alone, is of obvious use. Sigmoidoproctostomy for the exclusion of redundant sigmoid may often be employed with advantage to supplement the anastomosis of the caput coli to the rectum, or the redundant sigmoid may be treated

by the Troyanoff-Winiwarter anastomosis between the loops of the sigmoid, or eventually the redundant colon may be resected. At any rate, after typhloproctostomy, coils of redundant sigmoid cannot with safety be left above the stoma.

Montprofit's operation of dividing the terminal ileum and anastomosing both ends end-to-side with the sigmoid represents no improvement over simple typhloproctostomy. Here an attempt is made to drain the excluded cæcum in defiance of the ileocæcal valve through the short stump of the ileum, whereas this can be accomplished more simply and more completely by a large stoma in the floor of the cæcum.

Case, J. T.: Röntgenoscopy of the Colon, with Special Reference to Some Sources of Error in Diagnosis. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct. By Surg., Gynec. & Obst.

The colon is normally subject to certain variations in form and position and in the disposition of its content which are entirely physiological. The large pendulum movements first described by Rieder are especially active in changing the form and position of the transverse colon. The appearance of the bismuth-filled bowel undergoes numerous changes within twenty-four hours and from hour to hour on account of the influence of the different kinds of peristaltic movements to which the colon is subject. With increasing experience, morphological factors have shrunk in importance, whereas functional problems relating to the colon have assumed greater significance. An increasingly large number of symptoms formerly attributed to ptosis are now found to be due to other more tangible lesions. It is especially important for the röntgenologist to familiarize himself with the mechanical factors concerned in the activities of the large bowel. A study of Cannon's work on the physiology of the gastro-intestinal tract is of the greatest importance.

It is necessary to recognize the various changes in the disposition of the colon content by antiperistalsis and the different kinds of onward peristalsis, especially the large mass peristaltic movements which constitute the principal onward propulsive influence in the colon. The filling defect in the colon shadow due to carcinoma may be closely simulated by the irregular disposition of the colon content following one of these mass peristaltic movements.

Filling defects due to the pressure of extracolonic tumors are often definitely indicative of the identity of the organ or tumor which makes the pressure. Retroperitoneal sarcomata, uterine and ovarian tumors, splenic, hepatic, and renal tumors are all likely to produce characteristic dislocations of the colon.

Exaggerated antiperistalsis may be associated with either functional or organic obstruction in the distal colon. This tends to keep the bowel content as near as possible to the cæcum; hence it is not safe to judge as to the exact location of a colonic obstruction, from the point reached by the head of the bis-

muth column. A combined examination by means of the colon injection and the bismuth meal gives accurate information as to the location of colonic obstructions. Adhesions of the pelvic colon and other benign obstructing lesions are especially common below the crest of the left ilium. The cause of the obstruction may be functional, as in very marked spasticity due to colitis, or to spasticity of neuromuscular origin; or it may be organic, due to adhesions which are especially common in the distal colon. It is sometimes extremely difficult to differentiate between the röntgen findings in carcinoma of the pelvic colon and in adhesions of the pelvic colon, especially in women.

The author showed a number of cases of multiple diverticula of the colon, the diverticula varying in number from two or three to more than could be counted accurately. These diverticula are best seen immediately after a bismuth enema, a bismuth meal having been administered fifty or seventy-five

hours previously.

The author concludes by emphasizing that X-ray "pictures" represent only static conditions, hence the röntgen study of the colon must be carried on by fluoroscopic as well as röntgenographic means. It is further recognized that the evidence gained by the röntgen examination is only a part of the medical examination and should be considered in the light of the history and other physical and laboratory findings.

Mowry, W. A.: Relation of the Gastro-Intestinal Tract to Joint Disturbance, and the Value of Eliminative Treatment. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct.

By Surg., Gynec. & Obst.

Derangements of the gastro-intestinal tract operate in the production of chronic affections, such as rheumatism, gout, obesity, and, probably, diabetes. The stomach and intestines are causative factors in

many common arthritic manifestations.

Mowry has classified joint affections, excepting those purely traumatic, into infectious or toxic arthritis, true gout, and autotoxemic arthritis. In the first group are those in which definite suppurating foci could be determined or strongly suspected, for which surgery and vaccines are the best recognized methods of cure. Local infections, as in the tonsils, gums, and alveolar processes, or in the pelvis, are nowadays investigated by physicians at the onset of joint disturbance, as bacterial infection from some chronic focus or toxic absorption therefrom is so frequently the cause of the arthritis.

From a series of 244 patients suffering from joint disturbance, 92 are excluded in consideration of the relation of the gastro-intestinal tract to such cases. The remaining 152 cases are divided into two groups: 59 true gout and 93 autotoxæmic arthritis, both often wrongly termed "gouty" or

"lithæmic."

The principal points in the diagnosis of true gout are: family history; eating and drinking habits;

sex (gout occurring oftener in the male than in the female); clinical history of acute metatarsophalangeal joint attacks, usually of the great toe; cardiovascular changes; tophaceous deposits; and abnormally low uric acid excretion, except during acute attacks. Gastro-intestinal disturbances are common both groups and in the second group they have seemed to be important causative factors in the arthritis.

Diagnosis of acute toxemic arthritis has been governed in these 93 cases first by the arthritis itself. Most of the cases were of chronic type, with hypertrophy of the cartilages and often formation of Heberden's nodes. The fingers and knees were affected equally in two-thirds of the cases, with toes, wrists, ankles, and elbows next in order of

frequency.

Constipation was very frequent in these cases; a few had diarrhea, while some complained of alternating constipation and diarrhea. Only one-third of the cases gave histories of headache, and in these it was usually coincident with stomach or bowel attacks. In 48 per cent of the cases mucus was present in the stools, constantly or intermittently. Fully half of the patients complained of some form of "indigestion," most frequently with eructation and regurgitations.

In most cases examination confirmed the diagnosis of gastritis, colitis, chronic appendicitis, and, probably, cholecystitis. In nine cases there was tenderness and enlargement of the gall-bladder, and in eleven there was inflammation of the ap-

pendix.

The urinary findings showed an average specific gravity above 1025, with high acidity. Nearly all had a large amount of indican, no albumin, no sugar, and in only five cases were there traces of bile. There were a few hyaline casts, large numbers of calcium oxalate crystals in all but eight, and excess of uric acid in over one-half of the cases.

The blood-pressure showed an average of 149 systoles, which was high for the average age—47.

In the diagnosis of acute arthritis, based in two cases on loose putrifying stools and in one on impacted fæcal masses in the colon, immediate relief was given by internal irrigation, free purgation, and dieting. Salicylates were used in the autotoxæmic group and atophan in the gouty condition to afford relief from pain, while fomentations and other hydrotherapeutic measures were regulated to suit the requirements of each individual patient.

Laxative waters were used for free elimination in all but two cases. Paraffin oil and castor oil were given in cases where too large doses of a saline

irritated the gastro-intestinal tract.

The results of treatment were most gratifying. Seventeen patients were entirely relieved from pain or stiffness in the joints; all but fifteen of the remaining showed marked improvement. Patients were instructed as to the importance of diet and regulation of the bowels in securing permanent benefit.

Albee, F. H.: The Inlay Bone-Graft in the Treatment of Fractures, Joint Tuberculosis, and Certain Deformities. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, October.

By Surg., Gynec. & Obst.

This report presents the advances in bone and joint surgery which Albee with his motor saw outfit has been able to make by his ingenuity and originality in the use of the bone-graft in its wide field of application.

His remarkable series of successes in over 253 human cases covering a period of three years include 178 cases of Pott's disease, 16 graftings in congenital club-foot, 17 inlay grafts for ununited fractures of long bones, and 14 cases of paralytic foot deformities.

Actual bone fixation, correction of kyphosis, and early arrest of Pott's disease has been made possible by the bone-graft. Each spinous process is split longitudinally in halves, one-half of each being fractured on the same side to form a gutter for the implantation of the bone-graft, including periosteum, endosteum, and marrow substance, which is later removed from the crest of the tibia. Graft with the periosteal surface posterior is securely fastened in its bed by kangaroo sutures drawing the split portions of the supraspinous ligament together over the graft.

Post-operative treatment consists of recumbency on a fracture bed for from six to eight weeks, without a spinal brace or plaster of Paris jacket, except

in rare instances.

This technique is also applicable to paralytic scoliosis where the author has implanted the graft into the transverse processes of the convexity. He has also used this method in fracture of the spine. In strengthening and correcting deformity in spina bifida he has applied two grafts in a manner similar to those used in Pott's disease.

In tuberculosis of the sacro-iliac joint the author's technique consists of implanting his tibial graft so as to span the diseased joint, implanting one end into the wing of the ilium and the other end into the

first posterior spine of the sacrum.

A most important portion of this paper is that devoted to the treatment of fractures. The method of applying the inlay graft for fresh fractures is, in

brief, as follows:

The fracture is exposed by generous skin incision and, with the twin motor saws three-eighths to one-half an inch apart, cuts are made from two and one-half to three inches back from the fractured ends when held in proper alignment. These cut fragments are removed by a narrow osteotome to form a tongue-and-groove joint with the ends of the graft. With the same adjustment of the twin saws a graft is removed from the anterior internal surface of the patient's tibia sufficiently long to fill in the groove in the fracture ends and made to fit over the tongue ends of the gutter. Holes are drilled in the sides of the gutter so as to secure the graft in place by kangaroo tendon, the elasticity of the soft parts holding the ends together.

In ununited fracture of the neck of the femur, in-

stead of using the metal spike the author has devised the live-bone spike taken from the patient's tibia and shaped in the doweling instrument to fit a drill hole through the great trochanter into the head of the femur.

In fresh fractures where an open method is necessary, the graft can be taken from the fractured ends by making one groove twice as long as that in the other fractured bone-end, removing the short fragment and sliding the long fragment along so as to span the fracture.

His method of erasion applicable to acute adult tuberculosis of the knee consists of the removal with the bone saw of sufficient areas of the articulation. If the patella is healthy it is used for the grafts; otherwise grafts are removed from the tibia. The grafts thus bridging the junction of the femur and

tibia are held in place by bone pegs, as in the case of

fracture, or by kangaroo tendon.

In cases of paralytic or congenital dislocation of the hip persistently relapsing, the author deepens the acetabulum by a broad bone incision about half an inch back of the superior border of the acetabulum and, drawing this shelf of bone farther outward over the head of the femur to hold this segment from returning to its original position, a wedge-shaped graft, removed either from the tibia or the great trochanter, is inserted into the gap formed by the prying outward of the roof of the acetabulum, taking a reef in the relaxed upper segment of the capsule, thus holding the head of the femur more securely in position.

To correct the deformity in cases of relapsed and congenital club-foot, the author uses a wedge graft, removed either from the tibia or the cuboid bone of

the deformed foot.

In paralytic club-foot, the articulating surfaces of the scaphoid and astragulus are sliced off and the

wedge is placed between these bones.

Albee's conclusions are that the bone-graft furnishes a most trustworthy surgical agent; that the endosteum, marrow substance, and periosteum should be included in the graft to aid in osteogenesis and a rapid establishment of blood supply; that rapid union is enhanced by placing small particles of bone in contact with the transplant; that living bone possesses certain bacteria-resisting properties; that the bone-graft stimulates osteogenesis, and the graft immediately adhering by new-formed tissue should take the place of all internal metal splints.

The description of technique is complete, and the illustrations, drawings, and case reports add much

to the value of the article.

Bernheim, B. M.: Hæmolysis Following Transfusion of Blood. Tr. Mississippi M. Ass., Cincinnati, 1914, Oct. By Surg., Gynec. & Obst.

Having had one fatal case of hæmolysis following an emergency transfusion of blood and one non-fatal case following a transfusion for therapeutic purposes, Bernheim sent out a question form to various surgeons throughout the country with the view of as-

certaining just how frequently hæmolysis does occur following transfusion and what the consequences are. Briefly, he found that in 800 reported transfusions there were 15 cases of macroscopic hæmolysis, an average of about 2 per cent. In these 15 cases there were 11 recoveries and 4 deaths. No hæmolytic tests were made in three of the instances where death occurred, although there was plenty of time to have done so in two of the cases. The third was Bernheim's own case, which was a post-operative emergency case in which there was no time for making tests. In the fourth death, tests were made and it was known that "the donor's cells were slightly agglutinated by the patient's serum," but since agglutination is an entirely different process from hæmolysis, and since no other donor was available, it was considered fairly safe to use this donor and the result was that a fatality occurred.

Tests were made in 11 of the 15 recoveries, and in 9 instances hæmolysis was prognosticated. That there were no fatalities in this group is considered almost a miracle by Bernheim, who feels that his

study proves the value of the blood tests.

The author divides the dangers of transfusion into (1) immediate and (2) late, or delayed, danger. The first, or immediate, is acute dilatation of the heart consequent upon an inflow of blood of such force and rate that the recipient's heart is overwhelmed. A definite train of signs and symptoms indicates such a condition, which can always be recognized and

avoided by the careful operator.

The late, or delayed, danger is that of hæmolysis. which can be prognosticated in practically every instance by careful tests prior to transfusion. Bernheim feels that in the emergencies no thought should be given to the danger of hæmloysis. He thinks it far better to transfuse immediately and save a patient from imminent death, running the slight risk of a late hæmolysis, than to temporize with tests which require at least two hours even under the most propitious circumstances, for their proper performance - during which time the last flicker of life may disappear. Where, however, there is time,—which is the case in the majority of instances, - failure to have the tests made is an inexcusable blunder. The majority of bad results are not reported and Bernheim knows of numerous instances of hæmolysis, which for one reason or another he could not include in his study, so that instead of an incidence of 2 per cent, the true average occurrence of hæmolysis would at present probably be nearer 4 per cent, and practically all of it can be prevented.

Ransohoff, J. L.: Radium in the Treatment of Cancer of the Uterus. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct.

By Surg., Gynec. & Obst.

Radium is of undoubted value in cancers of the uterus at any and every stage of the disease. The control of hæmorrhage, discharge, and pain is undoubted. In every instance the radium has a beneficial local action—the disease disappearing locally.

The question as to whether radium has a permanent curative effect on cancers of the uterus must be left to the future to decide, as a large number of permanent cures is necessary before the claims of radium can be substantiated.

The same may be said of the use of radium in operable cases. At present, if possible, radium should be used in all cases of inoperable cancers of the uterus when the patient is not in the extreme

stage of emaciation and cachexia.

If the promises of radium in the treatment of cancers of the uterus are substantiated by permanent cures, radium may, in the future, entirely supplant operation, unless improved technique decreases the large operative mortality and promises a higher per cent of radical cures.

Koll, I. S.: Renal Infections from a Bacteriologic Point of View. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct. By Surg., Gynec. & Obst.

To properly consider the bacteriology of renal infections it is necessary to take into consideration the various factors that act as contributory to the passage of the pathogenic bacteria into the kidney. The relative importance of the three routes now accepted-lymphogenous, hæmatogenous, and urogenous—is of considerable interest. The present definite knowledge of the lymph-channels draining from the intestinal tract into the kidney readily accounts for the frequency of infections of the kidney associated with acute and chronic gastro-intestinal disturbances, a fact that even at present is not well recognized by the profession at large. Infections through the ureter from below cannot take place in the absence of an obstruction which may be either extra- or intra-ureteral.

A point of particular importance that demands a great deal of consideration is the pyelitis associated with pregnancy, the frequency of which is estimated as high as 20 per cent by some obstetricians.

Of late the hæmatogenous route seems to have been neglected in the consideration of the carriage of bacteria to the kidney. Its importance, however, should not be underestimated, as there can be no doubt but that the importance of the circulatory system as a carrier of bacteria is of as great, if not greater, importance than that of the lymph stream.

A careful perusal of the literature shows the order of frequency of the infecting organisms to be: the colon bacillus—in 90 per cent of the cases; staphylococcus pyogenes aureus; streptococcus pyogenes; typhoid bacillus; gonococcus; bacillus fæcalis alkaligenes, 2 cases; and the pneumococcus. Of parasites, the echinococcus, Bilharzia hæmatobium, actinomyces, in the order of their frequency, are mentioned by various writers.

Three factors should be recognized in arriving at a diagnosis which will give a basis for a rational treatment: (1) What is the contributing cause? (2) What is the invading organism? (3) What is the pathology—pyelitis, pyelonephritis, or pyone-

phrosis?

Geraghty, J. T.: Functional Renal Tests. Tr.
Mississippi Valley M. Ass., Cincinnati, 1914, Oct.
By Surg., Gynec. & Obst.

The necessity for functional renal tests arises from the fact that without them it is not always possible to recognize the presence of renal disease, and, above all, it is difficult to recognize the extent to which the presence of renal injury interferes with the

function of the organ.

In true nephritis it has been found that the phthalein test in combination with a blood urea estimation furnishes practically all of the information which can be derived from these functional studies, except in rare instances. Chloride estimations are useful in a special group, but for cases of urinary obstruction the phthalein test is incomparable, and only when the phthalein excretion is very low is it necessary to have a blood urea estimation. The presence of a high blood urea and a very low phthalein should contra-indicate operation and should call for more protracted preliminary treatment. For estimation of function in association with ureteral catheterization, the phathlein test is the simplest and furnishes the most accurate information. A considerable increase in the blood urea occurs only in the presence of rather severe bilateral renal disease.

While functional tests are extremely valuable and supply data frequently unavailable from any other source, it should be remembered that they reveal only the excretory capacity of the kidney. By themselves they do not make the diagnosis or supply the prognosis. They only indicate the functional value of the kidney at the time at which the test is performed, but cannot by themselves indicate what the renal function will be to-morrow or next week. This latter information must be derived from the knowledge of the underlying pathologic process

which is producing the reduced function.

Braasch, W. F.: Factors which Determine the Advisability of Prostatectomy. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct.

By Surg., Gynec. & Obst.

The author takes up for brief consideration the following factors which may influence the advisability of prostatectomy: viz., renal insufficiency, infection, lithiasis, atony of the bladder, and carcinoma. The patient's subjective symptoms together with the objective data following drainage of the bladder usually offer a satisfactory index of the functional capacity of the kidney, prior to operation, and should be relied upon in deciding whether the patient is ready for operation or not. The practical value of the so-called renal functional tests is of limited value as an aid in the prognosis of cases with urinary obstruction. Renal infection is a very important factor in the prognosis of prostatectomy and it is often difficult to estimate its degree.

Stone in the bladder as a complication to urinary obstruction occurred in 120, or 14 per cent, of the 872

patients on whom prostatectomy was performed in the Mayo clinic up to October 1, 1914. Stone was found in the kidney in but 3 of these patients. When stone was found in the bladder together with hypertrophied prostate, it was usually advisable first to remove the stone and drain the bladder. Occasionally the stone is the indirect cause of residual urine and temporary prostatic engorgement, which is reduced by the removal of the stone.

Not infrequently atony of the bladder is seen where no evident lesion in the nervous system can be discovered and when neither digital nor urethroscopic examination shows prostatic obstruction. This condition is frequently the result of an evident spastic condition of the internal sphincter which may frequently be relieved through endoscopic in-

cision of the sphincter.

The cystoscope is of considerable value in the diagnosis of urinary obstruction in selected cases: it is, however, frequently contra-indicated with marked hypertrophy of the prostate gland. cases of urinary obstruction, urethroscopic data may be of greater importance than cystoscopic data. This is particularly true of doubtful cases of carcinoma of the prostate and cases of intra-urethral enlargement of the prostate. The author described three cases in which urethroscopic examination showed enlargement of the prostate extending into the lumen of the urethra which could not be detected either by cystoscopic or rectal examination. With carcinoma of the prostate, instead of the usual sulcus seen in the posterior of the urethra between the hypertrophied lobes, an elevation of the floor of the urethra may be apparent between the lobes; a condition which on digital examination may simulate an inoperable degree of malignancy is subacute prostatic infection.

Cabot, H.: Anuria: Its Etiologic and Surgical Phases. Tr. Mississippi Valley M. Ass., Cincinnati, 1914, Oct. By Surg., Gynec. & Obst.

Classified according to pathology, there are two types of anuria: the secretory and the excretory. Classified by clinical causes, there are three types: the neuropathic, the destructive, and the obstructive.

Diagnosis of the presence of anuria is always simple. Diagnosis of its cause requires care, the use of all the means at our disposal, and accurate deductions.

Operation must be considered in all cases not due to destruction of kidney tissue. In cases of acute nephritis, operation may tide over an emergency but is rarely indicated. In cases due to obstruction of the ureter from without, operation will relieve the obstruction and is indicated when the cause is wholly removable, as in benign tumors.

Operation is always indicated in anuria due to obstruction within the ureter. If both sides are obstructed, both should be operated upon at the same sitting. If one is obstructed and the other has stopped secreting from reflex or from other causes, operation is indicated only on the obstructed side.

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# INTERNATIONAL ABSTRACT OF SURGERY

FEBRUARY, 1915

## COLLECTIVE REVIEW

#### **PYELOGRAPHY**

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ROBABLY the first attempt to render the urinary tract opaque to the X-ray was made by Tuffier (1) in 1897. He suggested the simultaneous combination of an opaque ureteral catheter and radiography. Schmidt and Kolischer (2), in 1901, independently suggested the same method and published radiograms which showed the course of the ureter and the situation of the renal pelvis by means of a fused wire inserted into the ureteral catheter with simultaneous radiography. They developed the possibilities of this method and demonstrated its value in various conditions. In 1901 Löwenhardt (3) described somewhat similar methods as did also von Illvés (4) the following year. In 1905 Fenwick (5) suggested for the same purpose the use of a ureteral catheter with its walls impregnated with oxide of iron. These methods were the forerunners of the use of liquid solutions opaque to the X-ray for the purpose of rendering the outline of the ureter and renal pelvis visible in the radiogram, a method which has been called pyelography or, to be more exact, pyelo-ureterography.

The development of the history of pyelography may be considered from the following standpoints: (1) technique; (2) diagnostic data;

and (3) accidents arising from its use.

Technique. Probably inspired by his ability to outline the alimentary tract with bismuth, Klose (6), in 1904, suggested the injection of an emulsion of bismuth into the pelvis and the ureter with simultaneous radiography. This method failed, however, because the resulting

shadow was uncertain, and it was found difficult to remove the particles of bismuth which adhered following the injection. It remained for Voelcker and von Lichtenberg (7), in 1906, to demonstrate successfully the complete outline of the ureter and renal pelvis in the radiogram. They were the first to suggest the use of colloidal silver (collargol) for this purpose. In attempting to outline the bladder in the radiogram, it was discovered in one of their plates that the solution had entered the ureter and renal pelvis also, causing them to be outlined in the radiogram. Encouraged by this discovery, they injected a 2 per cent solution, and later a 5 per cent solution, through the ureteral catheter into the pelvis of the kidney and were able to report the results of a successful series of pyelograms. The value of this method was slow to be recognized and, consequently, received but little attention until three or four years later. Within the last three or four years, however, the method has received widespread recognition, and is at present extensively employed.

Various other forms of colloidal silver have been suggested by some observers. Argyrol in solutions of 40 or 50 per cent was advanced by Keyes (8) in 1909; silver oxide or cargentos, by Uhle and Pfahler (9) in 1910; nargol and electrargol, by others. Various solutions other than colloidal silver have been advocated. In 1913 Döderlein and Krönig (10) suggested the use of xeroform (15 to 20 per cent in olive oil). Attempts were made to render the outline of the pelvis and ureter visible by injecting gas instead

of liquid solutions. Burkhardt and Polano (11), in 1907, first suggested injecting oxygen into the pelvis for this purpose. In 1911 von Lichtenberg and Dietlen (12) reported a series of pyelograms made with the use of oxygen and recommended its substitution for colloidal silver. However, the use of the gaseous medium did not receive widespread recognition since the resulting outline was frequently uncertain and hard to differentiate from that of gas in the bowel. The use of an emulsion of silver iodide was suggested first by Uhle and Pfahler (9). Recently Kelly and Lewis (13), 1913, have also recommended it and demonstrated a series of pyelograms in which it was used to advantage. claim that it cast as good a shadow as colloidal silver without causing any of the ill results which have been reported to follow the latter.

The various solutions had usually been injected into the renal pelvis by means of a hand syringe. Since the degree of pressure by this method was uncertain, and since it was impossible always to determine when the capacity of the pelvis had been reached, an effort was made to discover a safer method of injection. For the purpose of overdistending the renal pelvis, a gravity method apparatus was first suggested by Baker (14) in 1910. The same year this method was first applied to pyelography by Uhle (9) and his coworkers. They placed the solution in a tube which was held at a short distance above the level of the patient and allowed the fluid to distend the pelvis and ureter by gravity. Oehlecker (15), in 1911, also advised injecting the solution by the gravity method rather than by the syringe. In the same year a similar method was suggested by Stanton (16) and Bruce (17). In 1913 Thomas (18) described a simple apparatus for the bilateral injection by the gravity method. As recommended by experienced observers the gravity method is now almost universally employed.

The importance of a careful preparation of the injected solution was emphasized by the writer in 1913 (19). He recommended that the colloidal silver crystals be pulverized, dissolved in lukewarm water, and then carefully filtered; otherwise in the 10 per cent solution large particles of silver might be deposited in the pelvis and possibly cause irritation. He further recommended that there be no delay in making the radiogram after the kidneys have been catheterized and that the injection and radiogram should be made simultaneously. Kidd (20), in 1914, also urged that the renal pelvis should be subjected to pressure by the solution injected but a short time — preferably less than a minute.

The position of the patient while the pyelogram is being made is usually dorsal. In 1012 Fowler (21) recommended that a subsequent pyelogram be made in the erect position in order to observe the degree of renal excursion. Schramm (22), in 1013, recommended the moderate Trendelenburg position in order to distend and outline the ureter more completely.

The size of the plate varies with the purpose for which it is made and with the size of the field required. In 1911 Oehlecker (15) recommended a 40 x 50 cm. plate so that the entire urinary tract might be outlined. He emphasized the value of comparing the outlines in both renal pelves and ureters. Objections to this method may be raised on the ground of possible injury to both

kidneys because of incorrect technique.

The opinions of different authors vary as to the degree of pain that should be caused by injection of the solution. The majority of them say that mild pain should be the signal for stopping the injection. In 1913 Childs and Spitzer (23) claimed that severe pain should be the signal for ceasing injection. The writer, however, has stated, in 1913, that pain is unnecessary and should be avoided.

The greater the concentration of the solution. the clearer will be the outline following its injection, but it is a common experience that the more concentrated solutions are irritating. A 10 per cent solution is now most commonly employed, though it is maintained by some that a 5 per cent solution will usually suffice to outline with completeness and safety. In 1908-1909 Albarran and Ertzbischoff (24) recommended a 7 per cent solution, as did also Nogier and Reynard (25) in 1011.

The possibility of outlining the dilated ureters after filling the bladder with colloidal silver was first suggested by von Lichtenberg (26) in 1909. In 1911 Clark (27) also described this method, advising the Trendelenburg position so that the fluid would more readily enter the ureters. In 1913 the writer (19) recommended the method in selected cases, but called attention to the fact

that its use was necessarily limited.

Diagnostic data. Attention was first called to the value of pyelography as an aid to diagnosis by Voelcker and von Lichtenberg (7) in 1906. They emphasized its value in the diagnosis of hydronephrosis and also suggested that it might prove to be of use in the diagnosis of renal tumor and anomaly, although they did not then refer to any actual demonstration of such data. Albarran and Ertzbischoff (24) were probably the first to follow the suggestions of Voelcker and von

Lichtenberg, and, in 1908, published a summary of their experiences. Although they suggested the various possibilities of the method, their results were incomplete and unsatisfactory. It remained for other observers to note the full value of the method and to develop its possibilities in the diagnosis of numerous conditions in which its use has been demonstrated. Diagnostic data derived from pyelography may be found in articles by the writer from 1909 to the present time, 1914 (28). In papers read in 1909 (29) and 1910 (30), he called attention to its value in the diagnosis of the following conditions: (1) normal pelvis; (2) hydronephrosis; (3) pyelitis; (4) pyonephrosis; (5) renal tuberculosis; (6) renal tumor; (7) renal and ureteral anomaly; (8) mono- and polycystic kidney; (9) identification of renal shadows; (10) localization of renal shadows; (11) identification of ureteral obstruction; and (12) as an aid to ascertain renal function. This summary may be said to include practically all possible conditions in which the method has

been found to be of value.

The early writings of Voelcker and von Lichtenberg demonstrate the possibility of diagnosing the existence of hydronephrosis when other methods fail. Von Lichtenberg again described several types of hydronephrotic dilatation, and, in 1909 (26), referred to the diagnosis of movable kidney and ureteral kinks. In 1909 Keyes (8) described in detail the changes which take place in the calyces as the result of mechanical obstruction. He coined the term "plug-hat pelvis" to describe the appearance of the hydronephrotic pelvis. In a paper read in 1909 (29) the writer also described various types of hydronephrosis, with illustrations, and, in 1911 (31), he called attention to the value of the method in the diagnosis of early hydronephrosis. In 1911 Key (32) reported several cases of hydronephrosis with excellent illustrations. In 1912 Fowler (21) emphasized its value in the diagnosis of small dilatation of the pelvis. In 1913 Cabot (33) further emphasized this point and stated that it is frequently the only method whereby early hydronephrosis can be diagnosed. He also claimed the relation of the ureter to the pelvis to be of diagnostic importance in early hydronephrosis. In 1911 Oehlecker (15) referred to the value of pyelography in the diagnosis of dilatation in hydronephrosis and pyonephrosis. He described several pyelograms showing the dilatation of the renal pelvis and ureter which frequently accompanies pregnancy. In 1911 and again in 1913 Walker (34), in a paper devoted to the diagnosis of hydronephrosis, described further

details of the method. In 1913 Voelcker (35) gave a detailed description of the gradual process of pelvic dilatation, and differentiated between the mechanical and inflammatory types of dilatation. Probably the most recent paper on the subject is one by the writer (36) in which the details and possible variations of the outlines in the different stages of hydronephrosis are described. The value of the method in the diagnosis of hydronephrosis has been recognized by numerous other observers, among whom may be mentioned Nogier and Reynard (25), Bruce (17), Necker (37), Jaches and Furniss (38), Keene (30), and Legueu. Papin, and Maingot (40). In 1912 Fowler (21) called attention to the method of making a pyelogram with the patient first in the dorsal and then in the erect position. In this manner the full degree of excursion of both kidneys, when movable, as well as the consequent course of the ureters, can be more accurately ascertained.

The writer was probably the first to describe the various changes in the outline of the pelvis and ureter as the result of inflammation (20, 30). In a recent article he further described details of the various changes found in the different stages of inflammatory destruction (41). In 1911 Key (32) published several excellent plates showing dilatation as the result of infection. In a paper written in 1912 dealing with the value of pyelography in the diagnosis of various conditions, Paschkis and Necker (42) state that the dilatation seen with inflammation is due to ureteral obstruction. In 1913 Voelcker (35) described in detail the stages of inflammatory change in the pelvic outline. In 1913 Keene (39) also described the form of dilatation seen in both the renal pelvis and ureter as a result of inflammation. In 1911 Clark (27) described the method of outlining the ureter dilated as the result of inflammation by means of injecting colloidal silver solution into the bladder with the patient in the Trendelenburg position and by simultaneous radiography.

In 1910 the writer (30) called attention to the value of pyelography in the diagnosis of renal tuberculosis in certain doubtful cases. In 1911 Oehlecker (15) stated that the method was occasionally of value in the diagnosis of renal tuberculosis. Von Lichtenberg and Dietlen (12) substantiated these reports in 1911, and described the various possible deformities seen even in advanced tuberculosis. In the same year Nogier and Reynard (25) described a case of renal tuberculosis diagnosed by means of pyelography. In 1911 Key (32) also described the possible value of pyelography in certain cases of

renal tuberculosis.

Although the diagnosis of renal tumor by means of the pyelogram was suggested by Voelcker and von Lichtenberg (7) as well as by Albarran and Ertzbischoff (24), they neither illustrated nor described the many possible deformities. In 1000 (20) and again in 1912 (43), the writer detailed the various deformities which accompany tumor and illustrated their more important phases. In 1909 von Lichtenberg (26) also called attention to the possibility of pelvic deformity as the result of renal tumor. In 1911 Nogier and Reynard (25) stated that occasionally renal tumor could be diagnosed in no other way. In 1011 Oehlecker (15) also called attention to the possibility of diagnosing renal tumor by means of the pyelogram. These findings were corroborated subsequently by Jaches and Furniss (38). Keene (30), and others. The writer (20) has called attention to the value of the method in differentiating tumor in the extrarenal organs from renal neoplasm. In 1914 Kidd (20) also referred to the aid given in the differential diagnosis of abdominal tumor.

Although Voelcker and von Lichtenberg (7) were the first to suggest the use of pyelography in the diagnosis of congenital anomaly in the urinary tract, the first detailed data of the possibilities of the method were furnished by the writer in 1910 (30) and again in 1912 (44). In 1909 von Lichtenberg (26) cited a case of dystopic kidney diagnosed by means of pyelography. In 1911 Oehlecker (15) emphasized the value of the pyelogram in the diagnosis of congenital anomaly and cited a case with duplication of the ureter and pelvis. In the same year Nemenow (45) made a similar observation and cited a case of pelvic kidney which was diagnosed by means of pyelography. In 1911 Seelig (46) described a case with bilateral duplication of the pelves diagnosed by means of pyelography. In 1914 Joseph (47) described the value of the method in the diagnosis of a series of congenital anomalies. In 1914 Kidd (20) asserted that congenital anomaly is frequently overlooked and that its existence can frequently be ascertained by means of pyelography, or pyeloradiography, as he terms the method.

That pyelography could be of considerable value in the diagnosis of polycystic kidney was suggested in 1910 by the writer (30), who demonstrated with illustrations some of the varieties of deformity accompanying this condition. His later publication suggested that it might also be of value in the diagnosis of solitary cysts.

The value of pyelography in the identification as well as the localization of renal shadows was

first noted by the writer in 1010 (30) and later fully described in 1913 (48). In 1911 Oehlecker (15) also described various changes in the pelvic outline as the result of stone and called attention to their value in the identification of stone. In the same year, Holland (49) described the value of the method in the identification of renal and ureteral shadows, calling attention to its use in the differential diagnosis of gall-stone shadow. In 1911 von Lichtenberg and Dietlen (12) wrote of the desirability of localizing stone shadows by means of pyelography, and advised the use of oxygen instead of colloidal silver for this purpose. Nogier and Reynard (25) in 1012, and Keene (30) in 1913, recommended pyelography in the diagnosis of renal stone.

The value of the method in the identification of ureteral obstruction, including that due to lithiasis, was described by the writer in 1909 (20) and in 1910 (30). He detailed minutely the changes in the outline of the ureter caused by a stone in the lower ureter and, furthermore, called attention to the value of the method in the diagnosis of certain forms of stricture of the ureter. In 1010 Uhle (0) and his collaborators also described the value of pyelo-ureterography in the diagnosis of ureteral obstruction and lithiasis. In 1911 Oehlecker (15) described the value of pyelography in the identification of certain shadows in the area of the lower ureter. In the same year Dohan (50) referred to the same method. In 1913 Keene (39) stated that it had proved to be of greater value in the diagnosis of stone in the lower ureter than the shadowgraph catheter. and then described the resulting ureteral dilatation. In 1912 Furniss (51) described in detail the diagnosis of certain forms of stricture of the ureter which could be diagnosed in no other way.

Accidents. The most recent phase of the literature concerning the subject of pyelography deals with the dangers attending its employment. A number of reports were made of lesions found in the kidney after its removal, showing destruction of the renal tissue evidently by the injected colloidal silver. Thus, in 1911, Zachrisson (52) reported considerable reaction in five days following the injection of colloidal silver and, on removing the kidney, found that considerable destruction was present and that it was universally studded with black silver deposit. In 1911, Oehlecker (15), on removing the affected kidney in a case of renal tumor, found the presence of infarcts in the parenchyma stained with colloidal silver. In 1911 Jervell (53) observed a wedgeshaped area of gangrene in the kidney following pyelography. Ekehorn (54), in 1911, found

renal cedema on operating five days after pyelography. Buerger (55), in 1912, reported deposits of silver in surrounding foci of suppuration in the cortex of the kidney. Blum (56), in 1912, reported a series of experiments on the kidney in cadavers, and attacked pyelography on the ground that it was a highly dangerous and, furthermore, useless method in diagnosis. In 1913 the writer (19) reported three cases operated on for hydronephrosis in which evidence of silver was found in numerous infarcts scattered in the renal parenchyma. He stated that such necrosis of the tissue could follow retention of colloidal silver. If the drainage from the pelvis is blocked, peristalsis may force the retained silver solution into the straight tubules with resulting necrosis of the tissues. Tennant (57), in 1013, reported a case in which the substance of the kidney was damaged by injected colloidal silver. Voelcker (35), Kelly and Lewis (13) and, later, Vest (58) in 1914, reported several cases in which evidence of colloidal silver was found at operation in the perirenal tissue. In 1914 Mason (50) reported two cases where a number of infarcts were found in the kidney following pyelography. Troell (60), in 1913, reported a case in which infiltration of the tissue followed the injection of 6 or 7 ccm. of a 7 per cent solution of colloidal silver in a kidney which was otherwise surgical. Legueu and Papin (61), in 1913, described in detail the various types of lesions seen in the kidney following infiltration of the parenchyma with colloidal silver. They ascribe such lesions to overdistention of the pelvis with the hand syringe and have not observed them since employing the gravity method. In December, 1913, Schwarzwald (62) reviewed to date the accidents reported in literature, of which there were eight. He found that they were all due to errors in technique. He also reported a case of a kidney removed for pyelonephritis and multiple abscesses in which a pyelogram had been made a short time before. On examination of the kidney, silver was found deposited in the tissues of the diseased portion only. He concludes that the silver particles do not enter via the blood stream, but probably through the diseased or traumatized tissues. He believes that if the technique is correct no accidents should follow pyelography. Walker (63), in July, 1914, gave a detailed résumé of the technique involved in pyelography. He claimed that careful injection of the pelvis with hydrostatic pressure would usually obviate any injury to the kidney. He stated that infiltration of the renal substance resulted either from excessive pressure, prolonged pressure, or previous trauma to the pelvis by the catheter. He advised using a small catheter to insure return flow if the pelvis was overdistended.

Fatalities following pyelography have been reported by various observers. In 1911 Rössle (64) reported a fatality shortly after pyelography which he believed to be due to colloidal silver poisoning. Evidence of hæmorrhagic diathesis appeared following the injection. At postmortem the kidney showed silver substance embedded throughout the tissues. Smith (65) reported a death following pyelography, which he attributed directly to pyelography. In 1913 Rosenblatt and Morgandies (66) reported a fatality some hours following pyelography. The patient died in shock following an injection of 40 ccm. of silver solution. Vest (58) reported a death fourteen days after pyelography; he believed the pyelography caused hæmorrhagic diathesis and possibly death. In 1914 Hofmann (67) reported a death occurring four days after pyelography; the death was found to be due to rupture of a hydronephrotic sac. Such an accident is only illustrative of technical error in having used pressure sufficient to cause rupture, and is not an argument against pyelography. Within the past few months other fatalities have been reported by various American observers. It is of interest to note that in practically every case the solution was injected with the pressure of a hand syringe. The amount injected in most instances was greater than the pelvic capacity. It is of further interest to note that the fatalities were usually reported by comparatively inexperienced observers. Those familiar with pyelographic technique have had the least reaction following its use.

Within the past year a number of papers have been published dealing with experimental work on animals undertaken with a view of discovering under what circumstances injuries to the renal substance follow injection of colloidal silver.

Tennant (57), in June, 1913, reported a series of experiments in which he subjected the kidneys of pigs to varying degrees of pressure with colloidal silver solution, and noted the results. He found that by introducing the solution at a pressure of over 40 mm. of mercury that infiltration of the kidney invariably resulted.

Strassman (68), in January, 1913, reported the effect of overdistention of the renal pelvis in rabbits with colloidal silver under moderate pressure. He found that the silver particles were carried by the lymph-spaces as far as the renal capsule. By the end of twenty-four hours

the greater part of the silver had left the renal tissue. He concluded that with careful technique, taking care not to distend the pelvis forcibly, no injury should follow pyelography.

Wossidlo (69), in December, 1913, concluded from a large series of experiments on rabbits that when the physiologic capacity of the normal pelvis was exceeded by a large amount of colloidal silver solution injected under pressure that the colloidal silver entered the interstitial tissue between the tubules. With hydronephrosis, however, if the pelvic capacity is overfilled, the silver solution entered the renal tissue via the dilated tubules. When hydronephrosis exists, no more solution should be injected than the quantity first drained away. He claimed, however, that no damage would result if the capacity of the pelvis was not exceeded. He believes that if the pelvis is traumatized, as evidenced by hæmaturia, that colloidal silver should be injected with great precaution since it can then more easily enter the renal tissue.

Kidd (20), in January, 1914, reported a series of experiments on sheep's kidneys. He distended the pelvis with silver solution at various pressures, and concluded that the element of time under which the pressure was made was of as much importance as the degree of pressure. He claimed that the solution should be injected at a maximum pressure of 30 mm. of mercury and that it should be exerted less than a minute; when exerted higher and longer, the silver solution penetrated the renal substance to a varying degree. He believes that the mode of entrance

was via the straight tubules.

Rehn (70), in January, 1914, reported similar results following even moderate overdistention of the renal pelvis in rabbits, and believes that great care should be used when colloidal silver

is injected into the human kidney.

In May, 1914, Eisendrath (71) reported several experiments on dogs with similar results. On injecting a dog's renal pelvis with 20 ccm. of 10 per cent silver solution under pressure of 100 mm. the animal died within five minutes. Necropsy showed quantities of silver deposited in the various organs as the result of widely distributed silver embolism. He believes that this experiment explains the sudden deaths reported in man. He finds, however, that as long as only moderate pressure is employed and the capacity is not exceeded, no harm results from injecting the pelvis with silver solution.

It is very evident, therefore, that unless a pyelogram is made with strict technical precautions it may cause considerable injury. How-

ever, in the hands of those familiar with the necessary technique and the selection of cases it has proved to be a comparatively harmless procedure. Thus the writer (19) reported a series of over 1,000 pyelograms made without serious results to any patient. The method is too valuable in the diagnosis of many conditions in the urinary tract to be discarded. Effort should be made, however, to discover a substance which will not injure the kidney under any circumstances and which may be safely employed in the hands of those with limited experience.

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# ABSTRACTS OF CURRENT LITERATURE

# GENERAL SURGERY

# SURGICAL TECHNIQUE

#### ASEPTIC AND ANTISEPTIC SURGERY

Frank, R.: Disinfection of the Skin with Sterolin or Iod-Sterolin (Die Desinfektion der Haut mit Sterolin bzw. Jod-Sterolin). Zentralbl. f. Chir., 1914, xli, 1249. By Surg., Gynec. & Obst.

The author recommends the following solution (named sterolin) for rapid sterilization of the skin: balsam, Peruvian, gm. 4.0; olei ricini; terebinth. venet. (communis), aa gm. 2.0; glycerine gm. 1.0; spiritus vini conc., gm. 100.0. After the field of operation is shaved, the skin is rubbed I to 2 minutes with sterile gauze dipped in the sterolin solution. The arms and hands of the operator are also rubbed with the sterolin. A second washing of the operative field with sterolin finishes the disinfection. A second washing is also necessary for the operator's hands. A preliminary painting of the operative field with tincture of iodine (6.6 per cent) may also be used. This method was tested in 270 operations with aseptic wound healing in all cases except five. No irritation or staining of the skin was noted.

E. P. ZEISLER.

#### ANÆSTHETICS

Meyer, A. W.: So-Called "Total Anæsthesia" after Intravenous Injection of Local Anæsthetics (Über die sogenannte "Totalanästhesie" nach intravenöser Injektion von Lokalanästhetizis).

Arch. f. klin. Chir., 1914, cv, 170.

By Surg., Gynec. & Obst.

Some time ago the author undertook experiments in anæsthetizing the peritoneum by depositing local anæsthetics between the parietal peritoneum and the abdominal wall. The abdominal wall was opened under local anæsthesia and then the anæsthetic was injected with a blunt curved needle between the transverse fascia and the peritoneum. The entire insertion of the mesentery to the pan-

creatic region can be thus infiltrated retroperitoneally. Appendectomies were performed on human beings by this method and in some cases without the slightest pain. In animals gall-bladder extirpations and other operations were performed. Their noses, tongues, etc., were cut and pinched without any pain to the animals. From a study of the literature it was found that such a total anæsthesia had been produced by subcutaneous and intramuscular injection of local anæsthetics, and another series of experiments was undertaken, in which I or 2 per cent cocaine was injected intravenously. sciatic or femoral nerve had previously been laid bare for experimental purposes. The animals became analgesic after a few moments, and cutting, burning, and other forms of irritation were felt, but without pain. Corrosives could be applied to the intestine without pain, but the nerve-trunk remained as sensitive to pain as before, even with very large doses of cocaine. The anæsthesia therefore seems to affect only the peripheral nerve terminals to which it is carried by the blood. To confirm this assumption one leg was ligated before the anæsthesia so that the circulation was cut off, and the cocaine injection then caused total peripheral anæsthesia, except that the leg from which the circulation was cut off remained sensitive. The conclusion is that the intravenous injection of cocaine can be used only in operations that involve no large nerve-trunks. It is not a true total anæsthesia, but only an anæsthesia of the nerve terminals and finer peripheral branches. Klapp attained a true total anæsthesia by injecting cocaine and gelatine solution into the lumbar cord.

To obtain a sufficiently lasting anæsthesia in this way it is well to precede it by small doses of morphine. With scopolamine-morphine followed by cocaine injection, anæsthesia can be maintained for hours.

A. Goss.

#### SURGERY OF THE HEAD AND NECK

#### HEAD

Kanavel, A. B.: Osteoplastic Closure of the Trifacial Foramina. J. Am. M. Ass., 1914, lxiii, 1245.

By Surg., Gynec. & Obst.

Kanavel advocates this new operation as a substitute for certain palliative procedures now

employed in the treatment of trifacial neuralgia. His experiments were carried out on dogs, the work falling into three groups: (1) avulsion of the nerve with curettage of the canal, breaking down the foramen and covering the area by pedicle-flaps of adjacent periosteum; (2) avulsion of the nerve, curettage, and transplant of periosteum from some

other part of the body; (3) avulsion of the nerve, curettage, and transplant of bone to fill the canal.

Of these three methods the last appeared to be

the most satisfactory.

This latter procedure was carried out in a patient 74 years old with perfect results. The infra-orbital nerve was exposed and avulsed by twisting, the canal was curetted, and the cavity filled with a bone plug covered by periosteum. To remove the infradental nerve and obliterate the canal, an incision was made at the angle of the jaw, the bone was trephined, and the outer table removed. The canal was next curetted after the nerve had been avulsed, and the plug, after having been rotated 90 degrees to obliterate the canal, was put back and driven firmly into place. EUGENE CARY.

# Turck, R. C.: Malignant Tumors of the Jaws. J. Fla. M. Ass., 1914, 1, 76. By Surg., Gynec. & Obst.

The author believes with many others that cancer can be cured only by thorough operative removal in the early stages, and that cure is never certain unless the cause is removed before cancer begins. He believes that when cancer of the deep tissues has progressed to a point where a positive clinical diagnosis is possible, cure by any means whatsoever is improbable if not impossible.

In the vast majority of cases the small growths, irritations, or tissue changes about the jaws, from which cancer develops, may be removed without danger under local anæsthesia with one hundred per cent of cures. Cancer may be classed as a preventable disease; it always gives some warning of its approach; there is always first some small benign sore, ulcer, or growth; cure is always possible if the disease is arrested in its incipiency: Procrastination has killed more patients than the surgeon's knife

Turck states that differential clinical diagnosis between early malignant epulis and benign fibromata of the gum is usually impossible; the growth should be removed, subjected to immediate microscopic examination, and if found to be malignant, radical resection should be done at once.

Mysch, W.: A New Operation for Bilateral Bony Ankylosis of the Lower Jaw (Ein neues Verfahren zur Beseitigung einer beiderseitigen Ankylosis ossea des Unterkiefergelenkes). Zentralbl. f. Chir., 1914, xli, 1108. By Surg., Gynec. & Obst.

Mysch describes his operation as follows: (1) Horizontal incision along the arcus zygomaticus, which is turned down after a double osteotomy; (2) cutting through the insertion of the maxilla temporalis together with the tip of the process coronoideus (osteotomy of the latter); (3) resection of the ankylosed joint head or subperiosteal wedgeshaped osteotomy of the neck with interposition of a flap of muscle or aponeurosis, also free plastic with fascia lata, as used in one case on one side. If possible the operation is carried out on both sides

at one sitting. This operation was successfully performed on a girl of 14 years with an ankylosis of 11 years' duration. E. P. ZEISLER.

Barth: Surgical Treatment of Suppurative Meningitis (Chirurgische Behandlung der eitrigen Meningitis). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author reports three cases of cerebrospinal meningitis which he cured by laminectomy of the lumbar vertebræ and drainage of the sac of the dura. The meningitis had developed after injuries. Staphylococci, diplococci, and streptococci were found in the fluid obtained on lumbar puncture. Before the operation puncture had been performed several times without results.

The prospects for operative cure in meningitis are not so bad as is commonly assumed if operation is performed early enough, for the disease begins as a diffuse process, and encapsulation of the pus between the cerebral convolutions does not take place until later. There are two reasons why there has been such great skepticism regarding the operation heretofore. Recovery was thought impossible because only the terminal stages of the disease were being considered and because the course of such cases after operation was always thought of. It should not be forgotten that with the gradual development of meningitis, leucocytosis produces a stronger resistance to the infection. The spinal fluid obtained by lumbar puncture in meningitis has a markedly bactericidal effect, while this effect

The diagnosis depends on the presence of polynuclear leucocytes in the fluid from lumbar puncture; the infecting bacteria may have disappeared under the influence of the leucocytes. Recovery has been brought about surgically thus far in 50 cases, most of them in otology. Curability does not depend to any great extent on the bacteriological findings; cases showing pneumococci and streptococci have been cured.

is completely lacking in normal cerebrospinal

Lumbar puncture should be performed on the very first appearance of symptoms of meningitis. There should be immediate elimination of primary foci of suppuration, repeated lumbar puncture to relieve brain pressure, and if this is not sufficient, drainage of the cavity of the dura, either through the lumbar cord or the skull. Murphy drains in the posterior fossa above the foramen magnum through the cysterna cerebellaris. There is no rational ground for not treating meningitis operatively. KATZENSTEIN.

Vischer, A. L.: Traumatic Subdural Hæmorrhage with a Long Interval (Über traumatische subdurale Blutungen mit langem Intervall.) klin. Chir., 1914, civ, 455. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The first patient fell from a height of 6 meters and on operation seven weeks later there was found a large subdural hæmatoma which extended over the greater part of the left hemisphere. The hæmatoma was sharply circumscribed, covered with a fibrinous membrane and contained reddish black, partly coagulated, and partly fluid blood. It was emptied out, irrigated, and the dura sutured without drain-

age. Recovery followed in 15 days.

The second case was similar to the first. Operation two months after the accident showed a large fluid hæmatoma. The cavity between the dura and brain at its deepest point was 2.5 cm. deep, 7.5 cm. broad, and 16 cm. long. It was irrigated and the dura sutured without drainage. The patient recovered except for slight residual symptoms.

HANS BRUN.

#### Trotter, W.: Chronic Subdural Hæmorrhage of Traumatic Origin; Its Relation to Pachymeningitis. Brit. J. Surg., 1914, ii, 271.

By Surg., Gynec. & Obst.

The author believes that a relatively slight injury to the head may result in a slow accumulation of blood in the meninges. The blood is believed to come from small veins which pass between the dura and cortex at right angles to each other and which are torn by the movement of the brain in the fixed dura as the result of the concussion.

The relatively slow accumulation of blood leads to symptoms which differ from those following the rapid development of local intracranial pressure, in that the irritative symptoms are very slight or

The initial symptoms are headache and drowsiness. In a few weeks these may change to more severe symptoms, the most common of which is an intermittent coma. The author believes that the condition is often unrecognized and that the condition which has been described as pachymeningitis interna hæmorrhagica is probably more often of traumatic than of inflammatory origin.

BARNEY BROOKS.

Korotneff, N. I., and Mintz, W. M.: Surgical Treatment of Epilepsy (Die chirurgische Behandlung der Epilepsie). Russk. Vrach, 1914, xiii, 472. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In genuine epilepsy the object of surgical treatment is to decrease intracranial pressure or change the cerebral circulation. This is attained by making a valve or by operating on the sympathetic. Statistics show how far both of these operations fall short of accomplishing their purpose.

The authors have collected 187 cases of valve formation with only 13 permanent recoveries, and it is worthy of note that in some of the cases of recovery the valve had closed — this was true in

one of the authors' cases.

Among 224 operations on the sympathetic, recovery persisted for as long a period as two years in 18 cases. The author does not believe that there is any scientific justification for operation in genuine epilepsy.

In cortical epilepsy of non-traumatic origin the prognosis of operation is better. If the disease is caused by a local process in a brain that had hitherto been healthy (no spasmophilia), the operation gives excellent permanent results. But since the kind or extent of the process cannot be determined clinically, there is no guarantee for the success of the operation. In spite of that, however, operation is indicated in all cases of true cortical epilepsy. The authors report 8 of their own cases of this kind, including 4 tumors, I abscess, I case of multiple cysticercus, and 2 cases of cerebral infantile paraly-There was recovery in 3 cases: one case of multiple cysticercus, which was operated upon 4 years ago, and 2 cases of cerebral infantile paralysis, operated upon 9 years and three months ago. In 5 other cases, in which no anatomical substratum was found, recovery did not take place. In one case, however, there was improvement in the condition.

If cortical epilepsy is due to trauma, operation must always be performed, and if possible a prophylactic operation should be performed as soon as possible; that is, as soon as the slightest suspicious symptoms appear. There is no guarantee of success in these cases, but the results attained thus far have been very encouraging. The authors report 7 of their own cases, 2 of which have not been under observation long enough for judgment to be passed upon them. Three patients were cured—one three years and one, one year ago. VON HOLST.

Stieda: Further Experience with Puncture of the Corpus Callosum, Especially in Epilepsy, Idiocy, and Related Conditions (Weitere Erfahrungen mit dem Balkenstich, speziell bei Epilepsie, Idiotie, und verwandten Zuständen). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author discusses briefly the methods of operation thus far used in the treatment of genuine epilepsy, and the results obtained at the Halle clinic by puncture of the corpus callosum by Anton's

method in epilepsy and idiocy.

Puncture of the corpus callosum was performed 19 times on 17 patients. In one case of epilepsy of puberty in a male the attacks at first changed in character, became milder, then stopped almost entirely for two years, returned in a milder form, and when a second puncture was performed 4 years after the first the attacks became still rarer.

In a case of Jacksonian epilepsy with choked disc the attacks gradually stopped entirely and the choked disc disappeared and has not returned in

four and one-half years.

In a case of genuine epilepsy, imbecility, and hydrocephalus internus the convulsions stopped for several weeks, but returned later in a less intense

In a severe case of epilepsy in childhood with twilight state the attacks suddenly ceased for six months. The procedure seems to have been lifesaving; afterwards attacks came on again, but more rarely, and a second puncture ten months later

improved them, but only temporarily.

In two cases of daily epilepsy with idiocy puncture was performed, the results being cessation of the attacks permanently in one case and for seven months in the other. Both patients were relieved of the epileptic restlessness and their psychic condition was markedly improved. In one of the cases rare attacks came on again after 7 months. In two cases of epilepsy at puberty in females the attacks became rarer after puncture for 10 and 13 months.

One case of epilepsy of puberty in a girl operated upon was not affected. In a case of imbecility since childhood, operated upon 8 months ago, the attacks, which had been coming on twice or three times a day, stopped for a month, and then returned in a milder form. In this case there was hydrocephalus internus and externus and adhesions

of the dura to the brain.

In one case of severe epilepsy since childhood the attacks stopped for a long time and are still very rare. A case of microcephalus with epilepsy showed no change. Another case showed slight improvement. The child, who had before been completely idiotic, became much quieter and more normal, according to the father's report. Two cases have been operated upon within the past six weeks, and thus far are free from attacks. Two cases were improved for a considerable time after the operation, but recently no reports have been received from them. There were no deaths from the procedure and no injurious effects.

The results are not brilliant, but the cases were mostly desperate ones. An earlier operation would doubtless have given better results, for puncture of the corpus callosum is without danger, and it is an operation that can be performed quickly and easily. There is neither brain lesion nor shock and it can be performed under local anæsthesia. Generally, on opening the dura there is only slight brain pulsation or none at all; after puncture and discharge of a few cubic centimeters of fluid, brain movements reappear - a sign that the circulation, and therefore the nutrition of the brain, have been benefited. Headache and dizziness, which are frequently unpleasant symptoms of epilepsy, disappear. Puncture of the corpus callosum not only compares favorably with other operations recommended for genuine epilepsy, but it is even to be preferred to them because it is so easy to perform and can be repeated when necessary.

HILDEBRAND, of Berlin, is not very well pleased with the results of puncture of the corpus callosum. He has performed it in 32 cases. One drawback is that there is no means of keeping the puncture open. He had one death from injury of a vein, not a sinus.

KOCHER, of Berlin, for this reason recommends that a small trephine opening be made to overcome

the difficulty mentioned above.

TILLMANN, of Cologne, thinks the effect of puncture of the corpus callosum can only be to equalize

pressure differences; he, therefore, uses it only where pressure differences can be demonstrated. He has often seen signs of inflammation in epilepsy; the fluid obtained by lumbar puncture was rich in albumin in 50 per cent of the cases. The arachnoid otten shows small cell infiltration. Jacksonian epilepsy is distinguished from genuine only by its location. He points out the importance of the subarachnoid space, which is continued in the peripheral nerves, hence the quick effect of strychnine. Epilepsy is often due to inflammation of the peripheral nerves.

Lossen, of Cologne, has seen recurrence in three cases of hydrocephalus after puncture of the corpus callosum; therefore in three further cases of hydrocephalus he performed puncture of the cystern, combined with puncture of the corpus callosum and drainage of the lateral ventricle with a saphenous vein. In two cases there was marked improvement; in the other, death resulted from infection.

SCHLOFFER, of Prague, performed puncture of the corpus callosum 20 times in the method described by Kocher, which demands a large opening. In one case there was unilateral paralysis from hæmorrhage.

KATZENSTEIN.

Hickson, W. J.: Organic Brain Lesions in Mental Defectives. Illinois M. J., 1914, xxvi, 394. By Surg., Gynec. & Obst.

The author's report is based on 100 consecutive admissions to an institution for the feeble-minded and 25 cases of a high-grade borderland type of defective-delinquent, selected at random and examined in the psychopathic laboratory of the Municipal Court of Chicago.

This group of 125 cases was examined specifically for organic brain lesion to further substantiate or refute, if possible, the correlation of these conditions with feeble-mindedness and delinquency, and to further substantiate or refute, if possible, the theory that there are no psychoses without neuroses and no

pathopsychoses without pathoneuroses.

It was further observed that there were relatively few negroes coming into the court, and those the author tested were rated quite high mentally. It would appear that feeble-mindedness is rather rare with full-blooded negroes, and in spite of the prevalence of syphilis in this race, few metasyphilitic affections are found.

The mental tests used were the Binet-Simon, Rossolimo, graduated association, and standard psychiatrical tests. The necessity for the standard-ization of the tests, as well as the giving of the tests, was very apparent. The first six weeks of work in the laboratory, in addition to all the other cases tested, showed results on 245 boys. Of these, 207, or 84.49 per cent, were morons; their average chronological age was 18.71 years; their basal age 8.69 years, and total mental age 10.98 years. Of these 245 cases, 20, or 8.16 per cent, were borderland cases, with an average chronological age of 20.10 years, a basal age of 10.42 years, and a total age of

12.27 years. Eighteen, or 7.34 per cent, gave a normal mental development with a chronological age of 20.94 years, a basal age of 10.83 years, and a total mental age of 12.70 years. Some of the latter showed mental defect in contrast to mental defectiveness.

It was found that the lower the boys rated in the test the earlier and oftener they got into the toils of the law. It was found also that there was another test which was the most practical and reliable of them all — the world test, the economic test. The segregation of these cases in the specialized courts brought out the fact that in addition to a physiological and psychological critical period, there was also an economic or sociological critical period, highly correlated with the other two, which latter falls between the ages of 17 and 21 years, when the boy begins to be put on his own responsibility, when he is expected to become independent and be self-sustaining. This is the period in which most of our boys fail, as then there are brought into play certain psychological faculties that heretofore have been very little called upon, and since the majority of these boys are of the higher type of feeble-minded they are not discovered so readily by the casual observer in the earlier years, and the defect first becomes evident at this time. In order to classify the higher grade of these boys, a new term had to be coined, namely. "sociopath," the sociologic-economic unfit testing over 12, but yet mentally

The neurological condition found in these cases is what is generally known as infantile cerebral paralysis. This includes diplegias, or Little's disease, the paraplegias, pseudobulbar palsy, etc. It was found that most of these cases showed the infantile type of hemiplegia, and that, as a rule, it did not follow the Wernicke and Mann predilection type of involving certain muscle synergisms. The most frequent symptoms noticed were underdevelopment of one-half the body or limb, the prevalence of Babinski's sign, either of the continuous or reaction type, very often the Oppenheim, and occasionally the Rossolimo and the Gordon signs. There was usually ankle and patellar clonus and exaggerated knee-jerks. The other superficial and deep reflexes were usually found altered. It was possible sometimes to elicit a difficult Babinski sign by the reënforcement method of Jandrassik.

defective. This fits in very well with the common

terms of psychopath and neuropath.

It was interesting to note that these same symptoms were found in 8 cases of the Mongolian type of feeble-mindedness, and also in one cretinoid, who failed to improve on thyroid treatment. As a further means of bringing out the symptoms the blood-pressure apparatus was used, which shows on the affected side a diminution of from five to ten millimeters of mercury over the sound side. The ergograph and dynamometer also helped to secure a diagnosis. These findings, if further substantiated, will be of great importance to psychologists and neurologists, the courts, and economists.

The only treatment thus far suggested for the defective-delinquent has been segregation and sterilization.

Kuttner, H.: The Results in One Hundred Operations Performed on the Diagnosis of Brain Tumor. J. Am. M. Ass., 1914, lxiii, 1530.

By Surg., Gynec. & Obst.

Kuttner emphasizes the importance of early diagnosis of brain tumor and advises that suspects be placed under the observation of a neurologist. He regards the diagnostic brain puncture of Neissor and Pollak as a step forward, and minimizes the danger from hæmorrhage in its use; but as he has seen a direct rise of brain pressure following the puncture, this should be done only when conditions permit immediate trepanation. This method aids diagnosis both as to the presence as well as the extent of tumors, as they may become very large

Annoying contralateral paresis or paralysis follows in some cases of palliative trepanation in which the pressure is sufficient to force the brain into the gap; this condition is transitory in some cases, but in others the symptoms persist.

if deeply situated, with relatively slight symptoms.

Kuttner suggests that in cases of doubtful localization trepanation be done both above and below the tentorium simultaneously, especially in those cases where the posterior cranial fossa is believed to be the site of the tumor.

Puncture of the corpus callosum and ventricular drainage has not yielded gratifying results.

A two-stage operation is advised for brain tumors and also for palliative decompression except in those cases that demand immediate opening of the dura. Local anæsthesia has been a welcome advance and full ether narcosis has only rarely been employed.

Out of 100 patients operated upon a tumor was removed in 30 cases. In addition the presence of a tumor was later demonstrated in 34 cases. Forty-five patients died as the result of the operation or its complications.

D. L. DESPARD.

Long, T. L.: The Relation of the Cerebellum to the Labyrinth. *Illinois M. J.*, 1914, xxvi, 296.

By Surg., Gynec. & Obst.

The close connection of the cerebellum to the labyrinth is sometimes not fully appreciated. Sufficient emphasis is not always given to the interrelations of cerebellar and cerebral functions, the substitution of the one for the other being frequently overlooked. The automatic acts were once willed movements on the part of the higher mechanisms at the expense of consciousness. In the event of embarrassment to the cerebellum substitution may be effected by the labyrinth and the cerebrum. The intimate relation of the vestibular apparatus to the cerebellar mechanism facilitates attempts at restitution of cerebellar functions.

There are constant excitations coming from the labyrinth for muscle tonus, and these are controlled and inhibited by the cerebellum. The intimate

associations of the centers of the vestibular and cerebellar mechanisms and the similarity of their phenomena are to be considered in interpreting certain anomalies in station and motility. Phenomena arising from a vestibular lesion usually disappear in a short time if the cerebellum is intact, but in the event of a lesion of the vestibular apparatus in a cerebellar case there is not likely to be any restitution. This suggests an interrelation of

the labyrinth and the cerebellum.

These two systems, the labyrinthine and the cerebellar, have interesting anatomical connections. Their impulsions have a common meeting point before final distribution. The excitations or impulsions of the labyrinth are constantly flowing to the triangular auditory nucleus, and the nuclei of Bechterew and Deiters, from which they are reflected to the muscles, giving them tone. Many eminent physiologists maintain, from observing experimental and secondary degenerations, that very few or no fibers are destined from the vestibular nuclei to those in the cerebellum; hence the impulsions from the labryinth cannot be stored in the cerebellum. On the other hand, however, there are fibers, the majority being direct, whose origin is in the cerebellar nuclei, that transmit excitations to the nuclei of Deiters-Bechterew. These centers receive excitations from two sources; consequently both the labyrinth and the cerebellum may excite the vestibular nuclei in the medulla. Accordingly the labyrinth cannot send its impulsions to the centers by the intermediation of the cerebellum. By the cerebellovestibular bundle the vermis is quite intimately associated with the labyrinth, both anatomically and physiologically. Many of the connecting fibers being crossed, each half of the cerebellum bears associative relations with both vestibular roots, the preferential distribution being for the homolateral side. The two systems, the labyrinthine and cerebellar, augment each other in maintaining tonicity. Thus it is evident that a lesion of one gives rise to phenomena quite analogous to those resulting from a disease or an anomaly in the other. The symptoms, however, are not identical, for the excitations are necessarily different. It is the vermis in particular that is in intimate physiological relation with the vestibular apparatus. Of course the nervous flux from the tegmentum of the vermis is not of the same nature as that from the labyrinth. The fibers also differ in their relation to the vestibular nuclei. The phenomena consequently vary.

The analogies and differences of the labyrinthine and cerebellar activities are made evident by comparing the functions of each system. The cerebellum is not the seat of any special sense, according to many physiologists. It is not the storehouse for labyrinthine impressions. Cases with cerebellar disease do not present any anomalies in compensatory reaction of the head and eyes. The perception of movement during rotation is intact in these cases. Organic functions and the muscular sense are

separated from the cerebellum. The anomalies in cerebellar cases consist in disturbances of mobility and muscle tonus. The fundamental symptoms of cerebellar cases are disequilibration, dysmetria, hypotonus, asynergy, and tremor. The cerebellum increases the duration of contraction and of tonicity, converting clonism into tonism.

It is a noticeable fact that the phenomena of cerebellar disorder become exaggerated in the event that the labyrinth is also afflicted. Likewise symptoms of a diseased labyrinth become augmented when complicated by a deranged cerebellar function, suggesting an interrelationship in both normal

and abnormal activity.

While in labyrinthine disease the phenomena are comparable to those observed in disorders of the cerebellum, yet the analogy is not so close but that some differences may be observed. Labyrinthine cases present a marked diminution in muscular energy and tonicity. Both hypotonus and loss of energy are much greater than in cerebellar disease. Disturbances in equilibration are quite characteristic and occur early. There are oscillations of the head and rotary motion, especially marked in bilateral lesions, the gait being uncertain and the base of support enlarged. These movements are more or less isolated, not forming an organized systematic group, as in disturbance of the cerebellum. If the amplitude of the oscillations of the head is great, the gait is zigzag or wavy. The labyrinth gives the individual his position in space. When there is a break in the vestibular mechanism, one loses perception of attitude and of progression, the oscillations of the head disturbing the equilibrium.

Disequilibration is exaggerated by variations in the position of the head. In other words, abnormal attitudes of the head result from labyrinthine disturbance; hence disorientation of the head produces disorders of equilibrium. In normal, or even in cerebellar cases, appropriate reactions are made to resist disturbance in balance, but in vestibular cases there is no resistance to propulsion or lateropulsion; no resistance is offered to falls. There is no reaction to an inclined plane or a moving surface. These individuals cannot perceive movements of rotation about a longitudinal axis. Vestibular cases and many deaf mutes, when rapidly rotated in a longitudinal axis, are not affected with vertigo. There is no reaction to such movements. Cerebellar cases react appropriately. This sustains the thought that the cerebellum is not the seat of perception for attitudes. In suppression of vestibular function the movements requiring precision are mostly affected. In a loss of muscle tonus there is a corresponding diminution in muscular sense; hence movements lose their potentiality and precision. The Romberg symptom is the rule. The ataxia is not the same in vestibular and cerebellar cases. The former is characterized by dis-orientation of attitude and the Romberg symptom. In the cerebellar ataxia direction or orientation of

movement is preserved; sensibility is undisturbed; there is a reaction to propulsion; the Romberg phenomenon is absent.

Three cases are reported illustrating the relation

of the labyrinth to the cerebellum.

# Cushing, H.: Surgical Experiences with Pituitary Disorders. J. Am. M. Ass., 1914, lxiii, 1515. By Surg., Gynec. & Obst.

The author recalls the fact that much of our knowledge of pituitary disorders has revolved around the question of tumor, using the term in a comprehensive sense. It was the presence of a tumor which first led Marie, and, subsequently, Fröhlich, to couple with this comparatively obscure gland the syndromes which bear their names; and as a usual thing, today, manifestations of tumor continue to be necessary guide-posts so that those who venture to predict pituitary disease in their absence do so with misgivings and merely on the ground that similar constitutional symptoms have been known to arise in conjunction with a growth.

Aside from the presence of the tumor, the author states that pituitary disease may bear little relation to the size of the lesion, for outspoken acromegaly may occur with but little enlargement of the gland, and the counterposed secretory state may accompany a primary glandular hypoplasia, so that tumor may not enter into the question at all. Conversely, a surprisingly large tumor producing extreme distortion of the structures of the interpeduncular space may give insignificant and hardly appreciable clinical evidence of its presence.

Cushing particularly calls attention to the fact that endosecretory expressions of pituitary disease are rendered increasingly complicated as soon as an attempt is made to differentiate between the symptoms produced by two lobes of the gland, for they have very different physiologic activities. It is possible that there may be an overaction or underaction of one lobe alone, or an overaction of one lobe associated with insufficiency of the other; and as in the case of the adrenal cortex versus the medulla, attempts have been made to disengage from the combined picture the symptomatology of a lesion confined to one or the other of the anatomic divisions. Furthermore, additional complexity is added by the polyglandular nature of every ductless gland disorder, which in some cases is so apparent as to make it doubtful which of the endosecretory organs is primarily at fault.

The author confesses to the difficulty of satisfactorily classifying all of the examples of hypophyseal disease of which he has records, but to give some idea of the character of the cases which he is to review from the standpoint of surgical treatment, he divides his cases into two groups: viz., those cases, 101 in number, presenting definite tumor manifestations, and those, 47 in number, without local signs of the disease. These 101 cases may be conveniently subdivided into the 48 cases in which the tumor has apparently arisen from some suprasellar source—usually from a congenital anlage and the 53 cases in which an actual enlargement (struma) or tumefaction of the gland itself has served to call forth the local symptoms. 148 cases are further classified on the basis of their endosecretory or constitutional symptoms, irrespective of a tumefaction or otherwise of the gland or its environs: (1) endosecretory symptoms on the side of hyperpituitarism; (2) endosecretory symptoms on the side of hypopituitarism; (3) endosecretory symptoms of a polyglandular character.

Regarding operative statistics, in the series of 148 patients with evidences of a hypophyseal derangement manifestations of tumor were present in 101 cases. In 95 of these cases surgical measures were undertaken. In a number of patients in the earlier series, operations were attempted which experience has shown to have been unwise, but possibly these are offset by the number of favorable cases in the series that have refused operation. Hence it may be roughly estimated that about twothirds of the individuals with outspoken pituitary disease suffer from defects of vision or from pressure discomforts, capable of some measure of surgical

relief. The various types of operation, from the side, from in front, and from below, the author indicates as follows:

Opera-Fatal-Cases tions Subtemporal decompressions... 2 37 33 Subtemporal explorations.... 8 8 0 Subfrontal explorations..... 6 I Transphenoidal decompressions 16 16 3 Transphenoidal extirpations... 58 52 4

125

10

114

GEORGE E. BEILBY.

#### NECK

#### Roth, P. B.: The Treatment of Torticollis. Brit. M. J., 1914, ii, 667. By Surg., Gynec. & Obst.

The paper is a plea for subcutaneous tenotomy and not the open operation. Roth has searched the literature for the reasons for abandoning the tenotomy operation but discounts the few he was able to find. The technique is given in detail as follows:

Place the patient under a general anæsthesia; paint the neck with iodine; while the tendon is being made prominent by gentle traction, introduce with the blade held vertically a sharp-pointed, shortbladed tenotome immediately to the inner side of the sternal head, half an inch above the sternum; when the way is clear to the tendon withdraw, and insert a blunt-pointed tenotome, insinuate it carefully behind the tendon, turn the blade at right angles to the tendon, and stroke the tendon with little short strokes while the anæsthetist puts the muscle on the stretch; the tendon gradually gives way as bundle after bundle of fibers are cut through;

there is no hurry; half a minute may be taken to divide the whole tendon. When the tendon is divided, withdraw the tenotome and at once seal

the opening with celloidin and gauze.

After the sternal tendon is divided the clavicular tendon, if it require division, at once springs up into the area of operation and appears as a tense band under the skin, just as the sternal tendon had pre-viously done. The sharp tenotome is again taken, a vertical puncture again made at the inner side of this tendon, and the operation completed exactly as before. No attempt is made to divide deep bands of fascia. After the first pad of gauze and celloidin is set, or, if both tendons have been divided, after the second pad, the surgeon takes the patient's head and firmly but gently twists it around until the chin is over the shoulder of the affected side; as it is moved around, any bands of fascia which perhaps still retain the head in a bad position give Turning the head straight again, the operator bends it sideways until the ear on the unaffected side can be made to touch the shoulder on that side. The head is then laid straight, a pad of wool fixed over the gauze with strapping, and the patient left until the next day, when the same two movements are performed again. On the third day the patient is allowed up. M. S. HENDERSON.

Hunnicutt, J. A.: The Absence of Hyperplasia of the Remainder of the Thyroid in Dogs; Autotransplantation of the Thyroid. Am. J. M. Sc., 1914, cxlviii, 207. By Surg., Gynec. & Obst.

The author notes that in 1887–1888 Halsted showed that in dogs hypertrophy took place in the remaining portion of the thyroid gland after small pieces of the lobe had been removed. In the experiments recorded by the author the operation of piecemeal removal was performed on 39 dogs, and the wounds, with few exceptions, healed absolutely per primam. In only one of these 39 dogs did the remainder of the thyroid present a picture of marked glandular hyperplasia. In experiments on 36 dogs, only 3 of the pieces obtained at the second operation or at autopsy differed microscopically from the pieces removed at the first operation. In these three instances the change was from early glandular hyperplasia to normal.

Of 42 transplantations, 19 were successful. The amount of privation of thyroid gland in the animals yielding the living graft varied from one-fifth of one lobe to one and seven-ninths lobes. Two-thirds of one lobe was removed from one dog, and a portion of this piece was transplanted at the same operation. The graft was not removed at the second operation nor at the third, when the gland in the neck was reduced in amount to four-fifteenths of one lobe. The graft was obtained at the fourth operation when it had been in the abdominal wall for six months; it had changed from normal to very early glandular hyperplasia. The four-fifteenths of the one remaining lobe in the neck of this dog has undergone

the same change.

From the author's experiments and study he makes the following summary:

1. One and three-fourths of the dog's thyroid gland may be removed without appreciably affecting the remainder of the gland.

2. In only 3 of the 50 dogs on which the operation of piecemeal removal was performed did the remaining gland change from a normal to a hyperplastic state

3. In 5 of the 59 dogs the remaining gland reverted from the early hyperplastic state to the normal.

4. When a diagnosis of some degree of hyperplasia was made at the first operation, the pieces removed from the same dogs at subsequent operations had not undergone further hyperplasia.

5. Of the pieces removed from 56 dogs at the first operation, 58 per cent were normal, 32 per cent showed early glandular hyperplasia, 5 per cent showed marked glandular hyperplasia, and 5 per cent showed very early glandular hyperplasia.

Definite increase in the size of the remaining gland — hypertrophy — was not observed.

7. The remains of the thyroid lobes, the accessory thyroids, and the successful grafts in a given dog,

presented the same histological picture.

8. In no dog was myxedema or tetany observed in which as much as one-fourth of the thyroid and one entire parathyroid gland were preserved.

GEORGE E. BEILBY.

Ball, C. F.: Clinical Application of Abderhalden's Reaction to Enlargement of the Thyroid. Interst. M. J., 1914, xxi, 1077.

By Surg., Gynec. & Obst.

According to the author, Abderhalden's reaction has shown the presence of 0.4 per cent of aminoacids in normal blood. In diseased conditions this amount is increased, producing a hyperaminoacidæmia. The protective ferment is produced by the group of cells being invaded, and it has a specific digestive action against the invading cells.

The author claims that in thyroid enlargements the application of the test tends to demonstrate that a specific ferment is produced for the condition present. Any diseased condition of the gland will produce a ferment that will digest normal thyroid, but only in true carcinoma of the gland will a cancersplitting ferment be produced. Carcinoma and sarcoma produce a ferment that reacts interchangeably.

Three goiter cases are reported. A carcinoma with metastases in the regional lymphatics and a recurrent sarcoma of the thyroid gave positive reaction. An exophthalmic goiter gave a negative reaction with cancer proteid as a substrate.

F. H. FALLS.

Lahey, F. H.: Thyroid Operations under Local Anæsthesia. Boston M. & S. J., 1914, clxxi, 598. By Surg., Gynec. & Obst.

The experience and conclusions from a series of operations upon the thyroid under local anæsthesia are reported by the author.

The patient is given one-fourth grain of morphia one-half hour before operation, and is then covered in such a way that a towel or sheet covers the face but does not lie on it, its upper edge being held by a nurse who sits by the patient to reassure her and so that the operator may watch the recurrent larryngeal nerve.

Injection is made with a syringe of large barrel but small needle. A fresh solution of 2 per cent novocaine with 15 minims of adrenalin to the

ounce is used.

The first infiltration is made across the neck in line with the proposed collar incision. The author's experience has been that it is more satisfactory if the infiltration is made into the skin than if a large infiltration is made in the areolar tissue beneath the skin.

The incision is made through a visible line of infiltration down to the platysma muscle. If the veins now passing through the muscles are to be clamped, the novocaine solution is injected around

the larger veins.

The injection between the platysma and the two underlying muscles being accomplished, after the flap is turned up exposing them, a little of the solution is injected along the anterior borders of the sternomastoid, which are then dissected free from their attachments to the sternohyoid.

Without further infiltration the longitudinal incision is made in the median line through to the sternohyoid and thyroid down to the anterior

surface of the gland.

The incision is then enlarged to the upper attachment of the sternohyoid upward and to the sternal notch downward. The sternothyroid is freed on each side on the anterior surface of the gland by sweeping the index-finger beneath the muscles upward and downward and gradually outward until both sides are entirely clear. A few injections are then made across the sternohyoid and sternothyroid to overcome the very slight pain produced by closing the double set of clamps transversely on either side. Cutting between the clamps is then not productive of any pain, if done with a sharp knife. Next the superior thyroid is clamped. The removal of one lobe or isthmus or both lobes may be proceeded with as with general anæsthesia. The thyroid has little sensitiveness. After removal of a portion of the gland and tying of the vessels an injection is made beneath the center of the collar incision and a pair of snaps worked so that a drain tube can be drawn through.

The sternohyoid, thyroid, and platysma are sutured without further infiltration; also the skin is painlessly sutured even if the operation consumes an hour. Eight cases were operated on in this

manner by the author.

The conclusions are:

r. The operation can not be said to be entirely free from pain, although the pain is only slight.

2. The operation takes one-third longer to accomplish than by other methods.

- 3. The technical difficulties are no greater and, in the opinion of the author, even less than with ether.
- 4. Post-operative recoveries have been more comfortable than with general anæsthesia.
- 5. The procedure, as a whole, has been sufficiently satisfactory to the author to cause him to wish to continue to use it, particularly in toxic cases.

A. HENRY DUNN.

Halsted, W. S.: The Significance of the Thymus Gland in Graves' Disease. Bull. Johns Hopkins Hosp., 1914, xxv, 223. By Surg., Gynec. & Obst.

Halsted has long been impressed by the interrelation of the various ductless glands, and particularly the relation of the thymus to the thyroid gland and its bearing upon the various symptoms which are classed as being those of Graves' disease. This article forms a valuable contribution to the litera-

ture on the subject.

He states that from the facts gleaned at the autopsy table, from experiments on animals, and, above all, from the results following primary thymectomies, there is gleaned convincing evidence that the thymus gland may play an important part in Graves' disease, and in some cases assume the title rôle. Some of the most puzzling features of the disease have been made clear by the discovery of the influence which the thymus may exert. He believes that there is little doubt that the secretions of the two organs concerned in the production of the Basedow picture are related. Antagonistic factors are also at work in the two glands, the presence of which is indicated sometimes directly and sometimes indirectly by the behavior of other organs.

A number of cases are cited from the author's practice, and also from the practice of other surgeons, bearing out his views that the hyperplastic thymus in exophthalmic goiter may display an action essentially similar to that of the thyroid and that the thymus persistens aggravates the symptoms of the

disease.

Primary thymectomies uncomplicated by strumectomy, and secondary thymectomies in cases not sufficiently relieved by resection of both lobes of the thyroid, would be the operations of choice for those searching for the essence of the Basedow thymus. The combined operation would be avoided by them as much as possible until it became more definitely known how profoundly and in what particulars the thymus may influence the disease.

GEORGE E. BEILBY.

Walton, A. J.: The Operative Treatment of Exophthalmic Goiter. Practitioner, Lond., 1914, xciii, 511. By Surg., Gynec. & Obst.

In a lengthy discussion and a critical review of the literature, the author considers the various phases of this disease under the following headings:

I. Is the disease due to an excess of thyroid secretion?

2. Are the results of medical treatment satisfactory?

3. Is operation associated with a high mortality?
4. Are the results of surgical treatment more satisfactory in the end than those of medical?

5. Is there any danger of myxœdema following

He reports a series of 14 cases operated upon, the results of which may be summarized as follows:

In several of the cases, on account of the short period intervening, the author was unable to give any definite conclusion; all, however, showed distinct improvement. In one case, this improvement was slight, and in another case there was a certain amount of recurrence of the symptoms after a temporary marked improvement. The author, however, thought that possibly in this latter case enough of the gland had not been removed. Of the remaining 12 cases, 8 returned to work in from two to three months after operation and have since been able to continue it; the other 4 who had been operated upon less than three months before had not been allowed to attempt work, although 2 of them had expressed themselves as capable of doing so. The exophthalmos has disappeared entirely in 4 cases, is very slight in 3, and has considerably improved in 4 others; 8 cases still have slight palpitation and dyspncea on exertion, but in 5 of them to a slight degree only.

GEORGE E. BEILBY.

#### SURGERY OF THE CHEST

#### CHEST WALL AND BREAST

Guthrie, D.: The Rodman Operation for Breast Cancer. J. Am. M. Ass., 1914, lxiii, 1256. By Surg., Gynec. & Obst.

Guthrie and his assistant, Molyneux, have performed the Rodman operation 74 times in the last 3 years, and while the time has been too short to reach any conclusions as to results, they are impressed with its good points and believe it to be one of the best radical operations.

In the operation Rodman emphasizes the importance of a primary axillary dissection; when the axillary involvement is known many advanced cases need not be subjected to a radical operation. The primary incision is a straight one, beginning one inch below the clavicle, two finger-breadths from and parallel to the sulcus between the deltoid and pectoralis major muscles. The axilla is exposed by severing the pectoralis major and minor The clavicular portion of the pectoralis major is left, unless the tumor is in the upper outer quadrant, The dissection of the axilla begins from above downward and within outward. The acromial, long and alar thoracic, and subscapularis arteries and veins are tied and cut; no enlarged glands are dissected out, the axillary contents being removed en masse.

The breast is removed by an incision beginning at the middle of the primary incision, encircling the breast and extending downward to a point midway between the ensiform and umbilicus. The subcutaneous tissues are everywhere cut on a slant to undermine the skin, as Rodman and Judd believe that the spread of cancer-cells is along the lymphatics of the superficial and deep fascias.

Rodman advises exploring the supraclavicular glands by means of a separate incision if the growth is in the upper hemisphere or if the axillary glands are extensively involved. The upper portion of the sheath of the rectus is dissected away with the pectoralis major and minor.

The closure of the wound is begun where it is started, near the clavicle. Closure of the oval is begun at the sternal end. Usually the closure can be completed without the use of skin-grafting. The author does not employ drainage except in fleshy patients or those in which there has been an undue amount of trauma, and he says that his patients are rarely troubled by serum.

EUGENE CARY.

Fetterolf, G., and Arnett, J. H.: A Case of Sprengel's Deformity. Am. J. M. Sc., 1914, cxlviii, 521.

By Surg., Gynec. & Obst.

The authors report a case in which the scapula had a triangular facet on its vertebral border just below the spine. This facet articulated with a triangular shaped exostosis arising from the right lamina of the sixth cervical vertebra. The articulation was covered with a capsule in which fluid was enclosed.

The right laminæ of the fifth, sixth, and seventh cervical vertebræ had not joined, causing a condition of spina bifida. This exostosis had prevented abduction of the arm beyond the horizontal.

The case also presented anomalies in the muscles. There were anomalous slips, and, in one instance, the rhomboideus major and minor, as muscles were absent, their place being taken by white connective tissues whose fibers took the same general direction as those of the missing muscles.

JAMES O. WALLACE.

McWilliams, A.: Subscapular Exostosis with Adventitious Bursa. J. Am. M. Ass., 1914, lxiii, 1473. By Surg., Gynec. & Obst.

The author reports a case of exostosis on the anterior surface of the left scapula about an inch and a half above the lower angle. The patient, a girl of eighteen, complained of pain in the affected region which was increased and accompanied by a grating sound on motion. The scapula had been growing more prominent since a fall twelve years

before. The diagnosis was made by röntgenogram and the growth removed by chiseling. It was 2.05 cm. by 2 cm. by 1.05 cm. in size, and consisted of bone surrounded by cartilage and a cystic wall of fibrous tissue. The symptoms were entirely relieved by operation and the shoulder resumed its normal appearance.

Dunham, K.: New Applications of Artificial Pneumothorax as a Therapeutic Measure. Am. J. Röntgenol., 1914, i, 331. By Surg., Gynec. & Obst.

The author discusses at length the relative merits of the diagnosis of chest conditions by auscultation and percussion and by the röntgen method. He considers study by stereoscopic röntgenograms indispensable, not only for the selection of cases suitable for nitrogen injection but also for the proper study of the progress of the disease and the management of therapeutic measures.

By auscultation and percussion it is impossible to map out the position or extent of collapsed lung or to define the heart outlines, but the röntgenograms give positive information regarding these

questions.

While artificial pneumothorax had been previously resorted to as a curative measure only in pulmonary tuberculosis, the author used the procedure in treating a case of aneurism, hydropneumothorax, hæmothorax, and pleurisy, with recurring fluid. WM. A. EVANS.

Burnham, A. C.: Post-Operative Pleurisy with Effusion and Empyema. Surg., Gynec. & Obst., By Surg., Gynec. & Obst. 1014, xix, 468.

Pleurisy with effusion and empyema are not uncommon following abdominal operations, especially laparotomies for suppurative conditions in the upper abdomen.

There were 14 cases of pleurisy with effusion and 5 cases of empyema in a series of 13,013 operations. Two cases of empyema occurred in a group of 150 operations upon the stomach and duodenum.

An idiopathic pleurisy with effusion or empyema on the right side should always arouse suspicion of a subphrenic abscess, or gastric or duodenal ulcer.

Serous fluid in the chest following an operation upon the abdomen is the most common type of effusion, and the majority of the cases recover; but empyema, while less common, is extremely fatal, the mortality of the cases studied being 100 per cent. Fever was constantly present in all cases, but many cases of pleurisy occurred in which there were no subjective symptoms referable to the chest.

The relation between post-operative empyema and subphrenic abscess should be emphasized. A purulent effusion in the right chest after an operation for a suppurative abdominal condition is almost always associated with an abscess beneath the diaphragm. Consequently such an effusion should always lead to the immediate exploration of the subphrenic space, even in those cases in

which there are no signs or symptoms referable to the abdomen.

Pleurisy with serous effusion may disappear spontaneously or may be cured by aspiration; but when the fluid is turbid or frankly purulent, treatment must be instituted to overcome the subphrenic infection as well as that of the pleural sac.

Case histories, with autopsy reports, are given in detail, showing the relation of pleural infection to

the primary disease.

Haines, W. D.: Tumors of the Mediastinum. Tr. West. Surg. Ass., Denver, 1914, Dec.

By Surg., Gynec. & Obst.

The classification of tumors constitutes one of the most changeable and unsatisfactory chapters in surgical pathology; each textbook contains a different classification and each author thinks he has the best; there is, however, an encouraging note in the wide discrepancies of opinion in books published within the quarter of a century just passed, in that with the increase of knowledge concerning causal factors in the production of tumors there has come a gradual diminution in the number of morbid conditions formerly known as tumors. comprehension of production of tumors has resulted in the combining under one head of a number of conditions which were formerly considered as inde-

Uppermost in this evolution is the recognition by investigators that tumors are made up of tissues normally present in the human body; i. e., the newgrowth is but a new arrangement of old structures. This does not imply that the new-growth is made up of tissues identical with its immediate surroundings, but that the component parts may be found existing normally in the body. Chondromata occurring in glandular tissue, dermoid cysts of the ovary, and numerous other examples will come to mind wherein totally unlike "foreign" tissue has been found in tumors; but upon examination it is found that such "foreign" tissue exists as such elsewhere in the body, and the task of explaining the presence of such tissue in an unusual location is left to the

imagination.

By far the greater number of intrathoracic tumors are located in the mediastinum, except aneurism they nearly all have their origin in the glandular tissue contained in this space. Neoplasms of the chest occurring outside the mediastinum usually involve these spaces in the course of their development. While it is manifest that the site of the tumor will dominate the clinical manifestations which accompany its development and determine the line of treatment to be instituted, still it is of more importance to determine the true nature of the growth and the effect it will produce on the sur-The scheme of diagnosis, rounding structures. therefore, should include careful consideration of the early and more or less obscure symptoms embracing muscular pains, irregular heart action, difficulty in breathing or swallowing, spasmodic affections of the laryngeal muscles, and pleuritic irritation and cough with or without effusion. These growths may be classed as benign and malignant tumors: the former group including aneurism, gumma, and tuberculosis; the latter including sarcoma and carcinoma.

Conclusions founded on observations of the natural history of these several growths will best serve for their early recognition and differential diagnosis. Some of these growths run a much more rapid course than others; some present marked constitutional symptoms and serious impairment of the general health long before symptoms referable to the chest manifest themselves.

Growths springing from the connective tissue in the mediastinum-sarcomata-may attain considerable size without producing symptoms, owing to the laxity of the tissue and the ease with which enlargement may take place in all directions. In the author's opinion this is a valuable point to remember in attempts at localization of chest tumors. The site of aneurism is more or less fixed and it is in this type of cases that those enormous deformities of the chest are encountered, such as bulging, erosion, and fracture of the bony cage. Extensive deformity occurring relatively early in the history of intrathoracic neoplasms may be induced by implication of a bronchus which causes collapse of the corresponding lung and compensatory expansion of the opposite side.

Pain in some degree is usually present, but the chief complaint of the patient suffering from mediastinal tumor will be his inability to get his breath; the pain, cough, and aphonia are annoying but the dyspnæa is persistent and terrifying, filling the patient's mind with ominous forebodings. This, the most prominent of the subjective symptoms, is characterized by a wide discrepancy between the amount of exercise and the respiratory disturbance which follows. The author states that he has seen a patient sitting in perfect comfort bring on a violent spasmodic coughing seizure and serious respiratory embarassment by merely walking across the room.

A résumé of the more prominent differential diagnostic points and a report of two cases operated upon by the author concludes a paper on a subject not frequently mentioned in surgical literature.

#### TRACHEA AND LUNGS

Pirie, A. H.: Pulmonary Abscess. Surg., Gynec. & Obst., 1914, xix, 549. By Surg., Gynec. & Obst.

The author cites five cases illustrating the value of X-rays in the diagnosis and treatment of abscess in the lung. Three of these cases were shown by X-rays to be suitable for operation. Of the remaining two, one was also suitable, but was complicated by the presence of tubercle bacilli in the sputum. The fifth case presented the clinical signs of abscess, but X-rays demonstrated that operation was not indicated, as no localized collection of pus was present, but rather a large dense area corresponding

to a gangrenous lung. In the latter case operation was followed by death. In the first three cases recovery followed operation, with gain in weight in each case. The case of abscess accompanied by extensive tuberculosis was not treated. The following conclusions may be drawn from the author's data:

 Abscess in the lung partly filled with pus and partly with gas can be diagnosed by X-rays.

2. A negative made with the patient lying prone is of no value.

3. A negative made with the patient erect will not show the condition unless the horizontal ray from the X-ray tube has passed through the horizontal upper border of the fluid.

4. It is essential to make a fluoroscopic screen examination with the patient erect, and to move the X-ray tube from the level of the upper part of the chest to the lowest part of the chest in looking for the horizontal line. It may even be necessary to turn the patient from side to side in order that the horizontal line may be shown exactly.

5. The horizontal line having been found, the patient should be placed on the affected side, the hips being raised a little so the spine will be horizontal, an anteroposterior screen examination should be made, and it will be found that the horizontal line of the fluid in the abscess is parallel with the spine. The upper and lower levels of the abscess are thus defined

6. Stereoscopic views of an abscess do not appear very clear, as neither the horizontal line nor the congested tissues around the abscess lend themselves to stereoscopic work. An attempt should be made to localize the gas above the abscess. A practical method is to place lead buttons in front of and behind the chest, so that they are in line with the gas in the abscess; then change the position of the tube and repeat the proceeding; join by imaginary lines the positions of the first two lead buttons and of the second two. The gas lies where these imaginary lines meet and a sufficient idea is gained of the depth to help the surgeon in his operation.

7. The surgeon should smell the trochar after each exploratory puncture. ARTHUR B. EUSTACE.

Carl: Experimental Studies in Influencing Pulmonary Tuberculosis by Operation on the Phrenic Nerve (Experimentelle Studien über Beeinflussung der Lungentuberkulose durch operative Massnahmen am Nervus phrenicus). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Carl tested the effect of unilateral section of the phrenic nerve on the thorax and thoracic organs in experiments on rabbits. The operation was easy, but care was taken to cut the phrenic deep enough, below the root of the sixth cervical nerve, a branch of which it frequently carries. Pieces I to 1.5 cm. long were resected, whereupon the thorax on the side operated upon became still immediately. Autopsy after a few months showed that the thorax on that side had sunk in, and that there was more

or less contraction of the lung, even in the upper lobe; this was of an extreme degree in some cases. When the animals had been infected with tuberculosis before the operation, there was always less development of the tuberculosis on the side where the phrenic had been cut. The author thinks, however, that these results, which were so good in animal experiments, cannot be considered as holding good in man, as other conditions prevail in regard

to the mode of infection. SAUERBRUCH of Zürich believes that in the operative treatment of pulmonary tuberculosis one of the most essential points is the choosing of the right cases for operation. Older cases are better fitted for operative treatment than the more recent ones. The prognosis of tuberculosis depends, not only on its extent, but also on the nature of the disease, and as this cannot be known before the operation, it is sometimes not possible to avoid doing harm by the operation. He has operated on 177 cases and the operation had a bad effect on the disease in 27, but there were so many cases of marked improvement to offset this that a continuance of operative treatment is decisively indicated. It is the fibrous forms that are best fitted for operation. It must not be forgotten that even circumscribed tuberculosis may be much more extensive than can be demonstrated. Even apparently unilateral tuberculosis is generally bilateral. In spite of that, unilateral operation is justified if a markedly progressive process is not demonstrable in both lungs. In 122 of his 177 cases Sauerbruch performed a unilateral extrapleural thoracoplasty. Three of these patients died from the operation and 27 were unfavorably influenced by the operation and died later. In 65 cases there was marked improvement and in 24 cases there was recovery; that is, the sputum, which had been abundant, disappeared and the patients could resume their work. These were mostly very severe unilateral cavernous forms of pulmonary tuberculosis. He speaks of cure only when it has persisted for at least two years. Section of the phrenic and the high position of the diaphragm resulting from it is useful only in combination with other methods, chiefly extensive thoracoplasty. He rejects the proposed method of filling cavities, as it can only cause partial thoracoplasty and as the filling is generally discharged from a nonaseptic region as a foreign body.

WILMS of Heidelberg also treats the beginning stages of unilateral tuberculosis surgically. He has recently performed extensive resection of the ribs, but there is no essential difference between his wedge-resection and Friedrich's thoracoplasty. As extensive rib resection produces a high position of the diaphragm, section of the phrenic is superfluous. He has had no unfavorable results with filling. Paraffin filling was used once successfully, lead was discharged once. Fat takes better, as has been shown by autopsy — living cells could be demonstrated in the transplanted fat after 17 days. In rib resection he crushes the intercostal nerves,

as this produces anæsthesia of the wall of the thorax. Of his cases, 4 recovered and 7 were improved

FRIEDRICH of Königsberg operates only on severe progressive cases and has written a dissertation in which he reports 8 cases of severe pulmonary tuberculosis. Hæmoptysis was observed in several of these before operation, but it never reappeared after operation. He showed one of these patients in excellent condition, and showed röntgen pictures demonstrating the complete contraction and atrophy of the lung.

KATZENSTEIN.

#### HEART AND VASCULAR SYSTEM

Werelius, A.: Experimental Surgery of the Heart, Lung, and Trachea. J. Am. M. Ass., 1914, lxiii, 1338. By Surg., Gynec. & Obst.

The author's experiments were carried out upon 120 cats. The conclusions are as follows:

- 1. The death-rate in the heart work was 38 per cent, in the lung research 50 per cent, and in the tracheal experimentation only one case out of twenty-five was saved.
- 2. Cats without heart-sac show very little, if any, disturbance.
- 3. If at the end of an operation on the heart the organ is acting poorly it is almost always fatal to suture the heart-sac.
- 4. The making of a new heart-sac from transplanted tissue is not very promising.
- 5. The opening in the pericardium should not be made too near the base of the heart, as sewing it may cause too much traction on the vessels and, incidentally, on important centers.
- 6. Extreme traction on the heart is one of the greatest dangers in heart surgery.
- 7. Through-and-through aseptic puncture wounds, unless through certain danger regions, create only a temporary disturbance.
- 8. Auscultatory findings were few in the operated heart of the cat.
- 9. The marvelous recuperative power of the heart is demonstrated by the recovery from multiple extensive operations on the organ.
- ro. The local atelectasis produced by pressure from sponges should be remedied by forcible expansion of the lung before the chest is closed.
- 11. The collapse of the chest wall in unilateral excision of the lungs is somewhat counteracted by mediastinal removal.
- 12. Certain contractile movements of the trachea are observed in excessive expiratory efforts.
- 13. In section and suture of the intrathoracic trachea a number of animals died from respiratory failure—seemingly reflex.

  JAS. H. SKILES.

Tuffier, T., and Carrel, A.: Patching and Section of the Pulmonary Orifice of the Heart. J. Exp. Med., 1914, xx, 3. By Surg., Gynec. & Obst.

The authors' purpose in these experiments was to develop a technique by means of which the pulmonary orifice could be enlarged. The operation consisted in suturing to the anterior side of the orifice a venous patch which permitted an increase in the circumference of the orifice after the arterial wall had been incised. The technique which was employed is described in detail by the authors, also their after-care of the wounds and the animals.

The operation was carried out on 8 dogs; 6 of the animals survived and were in good health more than six months after the operation. The experiments, therefore, seem to show that it is possible to perform an operation the object of which is to increase the circumference of the pulmonary orifice without much endangering the life of the animal. This leads the authors to hope that operations of this type may in time be employed in the treatment of stenosis of the pulmonary artery in man. George E. Beilby.

#### Carrel, A.: Experimental Operations on the Sigmoid Valves of the Pulmonary Artery. J. Exp. Med., 1914, xx, 9. By Surg., Gynec. & Obst.

The purpose of the author's study was to ascertain whether and to what extent intracardiac operations could be performed with safety, particularly those that might be devised for cauterization of infected valves, the suture of the foramen ovale, or of two valves in a case of insufficiency, and other plastic operations. The operations mentioned form a different class from those which have so far been performed, because they involve the stoppage of the circulation through the cavities of the heart and the passage of air into the cardiac cavities and require great speed of execution.

The author, at the beginning, expresses his doubt as to whether the operation may ever be applicable to human surgery. He finally concludes that incision, suture, and cauterization of the sigmoid valves of the pulmonary artery have been performed successfully in dogs. In the first series of ten animals there were only three accidents, probably from largely preventable causes, leading to the death of the animals.

George E. Beilby.

# Brauer, L.: The Treatment of Inflammations and Adhesions of the Pericardium (Die Behandlung der Herzbeutelentzündungen und Verwachsungen). Hamb. med. Überseeh., 1914, i, 7. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Pericarditis sicca should be treated by absolute rest of the body and analgesic remedies, especially in the cases with pronounced stenocardia. In the treatment of exudative pericarditis Brauer also recommends the use of diaphoretics, but he warns against the too early or too forced use of physical means of diaphoresis, because of the danger of heart collapse. If there is empyema of the pericardium, incision and drainage should be performed as soon as possible. Toxic pericarditis, hydrops of the pericardium, hæmorrhage into the pericardium, and pneumopericardium can be influenced little or not at all by treatment. In serofibrinous exudative pericarditis one or more punctures frequently save life.

As to diagnosis, the author points out that even with large exudates there may be a loud pericardial friction rub. The form of the heart dullness is frequently that of a blunt pyramid, but more often that of a large quadrangle. In the suppurative forms the indication is, of course, immediate operation; in the other forms puncture is indicated. In rapidly increasing exudates that are compressing the heart and lungs puncture is a vital indication, in large exudates that are being absorbed it is a symptomatic indication. The complete emptying out of a large exudate is neither possible nor necessary.

For the puncture Brauer recommends Fraenkel's trocar and gives a warning against the use of the ordinary puncture needles. The best place for puncture is that recommended by Curschmann, on the left side in the fifth or sixth intercostal space, sometimes considerably outside the mammillary line. In internal adhesions, which involve an obliteration of the pericardium, there are not necessarily any symptoms; these appear only when there is an indurated pericardium.

In the diagnosis of external adhesions, important points are an extensive drawing in of the bony wall of the thorax above the heart on systole, followed by bulging of the wall on diastole; simultaneous with the latter there is a loud heart sound. In adhesions that involve the large vessels of the heart there is sometimes a chronic congestion of the liver; also swelling of the neck veins on inspiration.

In the diagnosis of adhesions of the pericardium röntgen examination is important. As to prognosis and treatment, interference with the diastolic dilatation of the heart can only occasionally be overcome by direct operation on the induration; but the interference with the systole can often be overcome to a surprising extent by cardiolysis; that is, the removal of the ribs over the heart, as far as possible with their periosteum. The operation can easily be done under local anæsthesia, and consists in the resection of about 10 to 12 cm. of the fourth, fifth, sixth, and seventh ribs. Those cases are best adapted to cardiolysis where the disturbance is due chiefly to mechanical interterence with the heart's action. HAECKER.

#### SURGERY OF THE ABDOMEN

#### ABDOMINAL WALL AND PERITONEUM

Ziembicki: Surgery of the Lesser Peritoneal Cavity (Ein Beitrag zur Chirurgie des grossen Netzbeutels). Zentralbl. f. Chir., 1914, xli, 1489. By Surg., Gynec. & Obst.

The author discusses the surgical importance of the lesser peritoneal cavity—bursa omentalis—and its anatomical relations. Pathologic conditions in the lesser peritoneal cavity that have been described include (1) hernias through the foramen of Winslow or through an atypical opening; (2) liver abscesses with cholelithiasis perforating through the foramen of Winslow into the lesser sac; (3) hæmorrhage into the sac caused by hæmorrhagic pancreatitis or rupture of an aneurism of the splenic artery; (4) traumatic exudates of lymph; (5) phlegmonous inflammation as a result of pancreatic necrosis with perforation into the lesser sac; and (6) pseudocysts and real pancreatic cysts developing in the lesser sac.

The author reports two unique cases in this connection. The first case, a man of 42, gave a history of gastric distress, pain radiating to the shoulders, singultus, and vomiting for 5 years. Examination showed a swelling in the upper abdomen above the umbilicus with dullness. A pancreatic or mesenteric cyst was suspected. A bismuth X-ray showed the stomach to be distinct from the tumor. Operation revealed a tumor the size of a child's head in the lesser peritoneal cavity. The fluid aspirated from the tumor was dark green and gave all the chemical tests for bile. The surface of the liver was smooth and the gall-bladder absent from its normal position. The diagnosis was enormously dilated gall-bladder in the lesser sac. A drain was inserted and the patient made a good recovery. Subsequently the patient vomited the same kind of material that came through the drainage tube; hence a communication between the duodenum, stomach, and tumor must have existed. The second case was diagnosed as a tumor of the liver but was found at operation to be a retroperitoneal tumor originating in the lesser sac. Necropsy confirmed this and histologic examination showed a fusocellular sarcoma with cystic degeneration. Only seven primary tumors of the lesser peritoneal cavity have been re-E. P. ZEISLER. ported in the literature.

Imbert, L., and Zwirn, D.: Subumbilical Hernias of the Linea Alba Following Laparotomy (Hernies de la ligne blanche sousombilicale consécutives à la laparotomie). Arch. mens. d'obst. et de gynéc., 1914, iii, 476.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Hernias of the lower part of the linea alba are rare. They may be either spontaneous or traumatic. The latter may be due to injury, but most of them follow laparotomy. It is generally found in the history that healing was delayed by infection or that drainage had to be established for some reason. Spontaneous hernias are extremely rare; previous to 1904 there were only three cases in the literature. Like all hernias, true hernias of the linea alba have a sac of peritoneum which protrudes under the skin. Anatomically, they are to be compared to epigastric hernias. They should be treated surgically, for severe incarceration is not unusual.

Moschcowitz, A. V.: Strangulated Epigastric Hernia. Surg., Gynec., & Obst., 1914, xix, 520. By Surg., Gynec. & Obst.

In view of the paucity of similar cases, Mosch-cowitz reports in detail the history of a case of a strangulated epigastric hernia. The hernia was made up of two portions: one, a mass the size of an orange, was composed of omentum which had become strangulated in a true hernial sac, while the smaller portion was merely the fat enclosed between the two layers of the falciform ligament of the liver, which had become prolapsed extraperitoneally. Operation was followed by recovery.

After a careful search of the literature Moschcowitz was able to find only ten additional authentic cases of this malady, the pathogenesis of which the author discussed in a previous issue of Surgery,

GYNECOLOGY AND OBSTETRICS.

#### GASTRO-INTESTINAL TRACT

Hayes, M. R. J.: X-Rays in the Diagnosis of Abnormalities of the Intestinal Tract. Clin. J., 1914, xliii, 529. By Surg., Gynec. & Obst.

Haves states that to interpret accurately the various shadows produced by the intestines when loaded with an opaque substance is not by any means an easy matter, and in viewing the radiograms it must not be forgotten that we are looking at the shadow cast by the object and not the object itself; secondly, that the shadow of a loop of intestine when viewed obliquely sometimes gives the idea that the bowel is acutely kinked, when in reality the curve may be the arc of a circle which may not be at all sufficient to cause delay to the passage of intestinal contents. The author reiterates that the administration of purgatives on the day immediately preceding the giving of the bismuth meal increases the progress of the intestinal contents for a day or two afterward, and the routine administration of laxatives as a prelude to the X-ray examination of the intestinal tract is open to objection for this reason. The major portion of the article is taken up with a good description of strictures of the œsophagus which may be spasmodic, cicatricial, or malignant. Spasmodic strictures usually occur near the cardiac end of the tube. The food passes down normally in an elongated oval mass, rounded at the head and tapering at the end. There is at the head and tapering at the end. usually some dilatation above the contraction, but no food passes into the stomach. As more food is swallowed, the size of the shadow increases and the peristaltic movements become more violent, until after a few minutes the spasm relaxes and the contents enter the stomach with a sudden rush. Sometimes food is retained in the esophagus for a considerable period, and there may be an inclination to regurgitate it; but in such cases the patients rarely vomit, and they can tell when the food has passed downward.

In cicatricial contraction the former history aids in diagnosis. There may be seen on the screen one or more situations where some narrowing of the lumen exists, but the greatest narrowing is just above the diaphragm. In these cases there is not, as a rule, complete hindrance to the passage of the food, which later may be observed to trickle through in a narrow stream. Here, again, the œsophagus is dilated above the site of the stricture, but peristaltic movements are more active and violent, and as contraction follows contraction the contents sometimes rise as high as the arch of the aorta, or there may be regurgitation. There is never a sudden emptying of the food into the stomach, as in œsophagismus.

Malignant strictures are most commonly met with in men. The usual situation is near the cardiac end, but they frequently occur in the neighborhood of the level of the bifurcation of the trachea. Along the line of the œsophagus many dark shadows may be observed which are produced by malignant lymphatic glands. In cancer of the œsophagus the food passes normally until it reaches the site of the stricture, through which, as in the preceding variety, it may pass in a thin stream, or there may be complete occlusion of the canal. Peristaltic movements are feeble or absent. E. H. SKINNER.

# Eisen, P.: Radiological Contributions to a Diagnosis of Obstruction in the Alimentary Tract. Wis. M. J., 1914, xiii, 147. By Surg., Gynec. & Obst

The author enumerates the many advantages of röntgen diagnosis of obstructions in the œsophagus, stomach, and intestines. By the use of the opaque meal or an opaque enema in colon studies, the obstructions can be definitely located, the degree of obstruction determined, and the cause of the obstruction can often be determined.

The importance of a complete and careful examination of the entire tract, as well as of repeated examinations, is urged. Many deformities causing obstruction can be demonstrated to be due to spasms, and in these cases the source of the irritation is found farther along the intestinal tract. The most common example of this is the spasm of the duodenum due to an inflamed appendix.

findings in determining the proper surgical treatment

The author points out the value of the röntgen

of obstructions. It suggests the proper location for gastro-enterostomy, the necessary loops for a shortcircuiting of the bowels, and, in cases of gastric carcinoma, it may show the futility of laparotomy. WM. A. EVANS.

Brown, T. R.: The Value and Limitations of Fluoroscopic Examinations of the Gastro-Intestinal Tract. Maryland M.J., 1914, lvii, 247. By Surg., Gynec. & Obst.

Brown's method in gastro-intestinal bismuth examinations is as follows: The patient is given one ounce of subcarbonate of bismuth 18 hours before the examination, a bowel movement being avoided if possible, and then another ounce thoroughly stirred up in a glass of water is given either just before or synchronous with the examination. He prefers a fairly thick gruel of farina or

oatmeal to water as a vehicle.

The usual fluoroscopic examination with the patient in the upright and horizontal positions is described: then the author discusses the relative value of the fluoroscope and the radiograph, giving the classical comparison. He does not present any original items upon röntgenoscopy of the abdomen but gives a description of the various lesions and their röntgen interpretations. His conclusions are that the plasticity of the fluoroscopic method, the ability by its means to study the dynamics, as it were, of the gastro-intestinal tract, to enfold before us its physiology as well as its anatomy, the possibility of noting under our eyes the effect of the respiratory movement, of the change of position, of various forms of treatment, mechanical, medical, and otherwise-all these have made it a diagnostic aid in the field. To expect one method to solve a problem of great difficulty is fundamentally wrong very few fluoroscopic findings are absolutely diagnostic, individual interpretation of the picture presented varies definitely with the operator as almost, if not absolutely, some of the pictures may be presented by different conditions.

E. H. SKINNER.

### Price, E.: The Röntgen Ray and Bismuth Meal Method as an Aid in Diagnosis of Alimentary Disease. Edinb. M. J., 1914, xiii, 153. By Surg., Gynec. & Obst.

Price believes that the most brilliant achievement of abdominal röntgenology lies in the direction of confirming conclusions already arrived at by other and better known methods than in that of making independent discoveries, and the nearer we approach to perfection with our skiagrams, the greater is the necessity for a thorough clinical examination. Price's opaque meal consists of 2.5 oz. of bismuth oxychloride or pure barium sulphate and 2.5 oz. of bread crumbs with about 6 oz. of hot milk and sugar. Price considers only the röntgenoscopy of the colon, illustrating his text with several radiographs of quite usual cases, and a very beautiful röntgenogram of Hirschsprung's disease. E. H. SKINNER.

Willson, H. S.: Routine Technique of the Test-Meal and Bismuth X-Ray Work. J.-Lancet, 1914, xxxiv, 511. By Surg., Gynec. & Obst

To prepare the patient for a test-meal, the bowels are emptied and the usual dinner taken with meat and some coarse vegetable; at 10 p.m. a meat sandwich with lettuce leaves is taken; at 11 p.m. 20 raisins; at 7 a.m. two slices of dry bread, a cup of weak tea, and a cup of cold water. The tubing is inserted one hour later, for both motor meal and test-breakfast. This gives 8 and 9 hour periods for the raisin skins, meat, and vegetable leaves to pass from the stomach. Aspiration is unnecessary, as the patient can express the contents by pressure with the hands and by coughing, helped by slight in-and-out movements of the tube.

After the stomach contents have been withdrawn, if it is also a test-meal case, the patient is given two ounces of barium sulphate in any convenient, palatable medium and, nothing being ingested in the meantime, it is examined with the screen in six hours. The stomach should be empty and the presence of much residue almost certainly means an organic condition. The head of the barium meal should be at or near the cæcum, but the position varies with the motility and with the stomach acidity; it is advanced with low acidity and retarded with high acidity. The patient then drinks eight ounces of water containing two ounces of bismuth, and its progress down the œsophagus and into the stomach is closely watched. When in the stomach it is palpated to all parts, outlining the cardia, the greater and lesser curvatures, and the pylorus, through which it is forced if possible in order to visualize the duodenum. The stomach is then filled with two ounces of bismuth in a good suspension This should distend the stomach and reveal irregularities of the walls, such as filling defects or incisura. Next the peristalsis is studied. noting whether it is diminished, normal, or increased. It is often necessary to wait several minutes to determine its activity. A continuous exposure is not necessary - an occasional flash will keep one posted. In all cases in which the screen findings are not perfectly clear, or where there is a suspicion of a filling defect, two or more plates should be taken with the patient in the erect position unless the suspicious point is in the pars space cardiaca. The chest is screened as a routine and many interesting conditions that have not given physical signs are discovered. A chart illustrates some of the principal X-ray findings.

DAVID R. BOWEN.

Friedman, G. A.: The Difference in the Morphology of Blood in Gastric Ulcer, Duodenal Ulcer, and in Chronic Appendicitis. Am. J. M. Sc., 1914, cxlviii, 540. By Surg., Gynec. & Obst.

Friedman collected 12 cases of gastric ulcer, 18 cases of duodenal ulcer, and 20 cases of appendicitis, and made a careful study of the blood findings in each case with the intention of aiding the differential

diagnosis in these three conditions by means of a study of the blood.

He tabulated the operative findings of each case in detail, dividing the gastric ulcers into two groups—pyloric and non-pyloric. A few differences of these two groups are tabulated under the head—

#### CHIEF CHARACTERISTICS

Pyloric group:
Anæmia.
Absence of leukocytosis.
Relative eosinophilia.
Non-pyloric group:
Polyglobulia.
Leukocytosis.

Absence of relative eosinophilia.

Duodenal ulcer is then considered. The characteristics of non-hæmorrhagic duodenal ulcers are: (1) polycythæmia, (2) absence of relative lymphocytosis, (3) absence of relative eosinophilia. The chief characteristic is polycythæmia.

As case histories with the results of the examination of the faces were given elsewhere, it need only be mentioned that the presence of occult blood in the stools is not as frequent as is generally believed. A history of repeated intestinal hamorrhages was given in one case in which the blood showed anamia.

The author then discusses the blood findings in appendicitis, the chief characteristics of which are:
(1) large mononuclears, (2) transitionals, and (3)

leukocytosis.

From the tables it can be seen that there is a relationship and a difference in the blood of pyloric, non-pyloric, and duodenal ulcers, and appendicitis. The blood in non-pyloric ulcer is related to the blood of duodenal ulcer so far as erythrocytes, lymphocytes, eosinophiles, and transitionals are concerned, but differs in regard to the number of leukocytes. The presence of leukocytosis in non-pyloric ulcer makes the blood in this condition related to appendicitis. The most striking difference is found between the blood of pyloric ulcer and that of non-pyloric and duodenal ulcers.

The difference in the morphology of blood led to the construction of blood-pictures in the pyloric, non-pyloric, and duodenal types. The blood-picture in appendicitis, although it has a special characteristic—large mononuclears, which were absent from the blood in ulcers of the stomach and duodenum—does not represent a special type, but is a combination of types. The author cites four cases to illustrate his point.

A. C. STOKES.

Kehrer, J. K. W.: Cause of Round Ulcer of the Stomach (Über die Ursache des runden Magengeschwüres). Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, 679.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Kehrer believes that the cause of round ulcer of the stomach is repeated or permanent irritation of the mucous membrane of the stomach, and that cramp of the sphincter of the pylorus is the chief cause of this. A longer interval between the openings of the pylorus causes the stomach to be longer in emptying, and an increase in the degree of acidity because of lack of neutralization from the duodenum; this causes increase in the motor function of the stomach. This increased muscular action endangers the arterial supply of the stomach, since the smallest arteries are cut off by the muscle contractions.

In order to cause delayed opening of the pylorus experimentally, the author ligated, in dogs, the common bile-duct and Wirsung's duct which empty into a common ampulla in the duodenum, and the duct of Santorini. He implanted the pancreatic duct into the appendix or lower ileum, and conducted the bile, by anastomosis with the gall-bladder, into the same place in the intestine. In 6 animals there were marked injuries to the wall of the stomach. There was a dark brown, closely adherent membrane and a superficial and circumscribed necrosis of epithelium after 13, 64, and 25 days, and a deeper necrosis of the mucosa after o, 25, and 106 days, which, macroscopically and microscopically, were true ulcers. There were no thrombi or emboli either in the stomach or in the liver and pancreas. All the dogs were very much emaciated from failure of digestion in the small intestine, and showed a certain caution in eating. One dog vomited constantly. BERNARD.

#### Lockwood, G. D.: Round Ulcer of the Stomach in Children Before Puberty. Surg., Gynec. & Obst. 1914, xix, 462. By Surg., Gynec. & Obst.

Round ulcer of the stomach in children before puberty is comparatively rare. However, a review of the literature would indicate that it is much more frequent than is commonly believed. It is frequently overlooked and the diagnosis of appendicitis, gastro-enteritis, or ptomaine poisoning is made. After quoting various authors as to the rarity of this affection, the author reports a case which was diagnosed and successfully operated upon. The case was that of a girl, 13 years of age, who was suddenly seized with pain in the left side, thought to be pleurisy. The pain gradually increased in severity and became localized in the abdomen; it was worse at night and paroxysmal in character. The child was hungry and constipated. The chief points upon which the diagnosis was based were characteristic pain, tarry stools, and the detection of gas gurgling through the pylorus at the height of the paroxysm. This diagnostic sign the author regards as important. Operation revealed extensive cartilaginous like adhesions, rendering posterior gastro-enterostomy impossible. An anterior operation with a long loop was done, following which the child rapidly improved, regained normal health, and then developed symptoms of obstruction. A second operation revealed inoperable conditions, due to the rigidity of the stomach wall and to adhesions. The child died two weeks later.

Post-mortem examination showed extensive ulceration on the greater curvature of the stomach; the pylorus was surrounded by dense tissue and the liver studded with metastatic growths. There was also general metastasis. The microscopic diagnosis was carcinoma, implanted on a gastric ulcer.

The author reviews the literature, reporting about 50 cases collected by himself, 10 of which had been treated surgically. One hundred twenty-five cases in all are reviewed.

#### Balfour, D. C.: Treatment by Cautery of Gastric Ulcer. Surg., Gynec. & Obst., 1914, xix, 528. By Surg., Gynec. & Obst

Balfour describes a method of treating gastric uter by the cautery. He calls attention to the somewhat formidable character of the usual treatment of gastric uter by excision and suture, to the immediate post-operative dangers from hæmorrhage and impaired gastric motility, and to the later complications of deformity and hæmorrhage. He has, therefore, been led to devise a method of destroying the uter in such a manner as to obviate any possibility of hæmorrhage and the destroying of an appreciable amount of healthy gastric wall. He notes the long and satisfactory use of the actual cautery in dealing with many superficial ulcerations.

As applied to gastric ulcers, the author's technique is as follows: The portion of the gastrohepatic omentum in the region of the ulcer is carefully dissected free from the lesser curvature. The ulcer is carefully palpated, and with a Pacquelin cautery maintained at a dull heat the point is slowly carried through the ulcer until an artificial perforation is produced. The moderate burning is continued until the actual area of the ulcer is entirely destroyed. Closure of the opening is then made by interrupted sutures of chromicized catgut reënforced by mattress sutures of silk. The reflected gastrohepatic omentum is then replaced over the site of the ulcer and fixed by superficial interrupted sutures of fine silk.

#### Kane, E. O.: Gastrostomy in Desperate Cases of Peritonitis. Internat. J. Surg., 1914, xxvii, 344. By Surg., Gynec. & Obst.

The author advises gastrostomy under local anæsthesia for stercoraceous vomiting, abdominal distention, and thirst in desperate cases of peritonitis. He claims this procedure imposes less discomfort and less shock than gastric lavage, and the relief is complete and permanent. The patient need not be removed from bed for this operation. The author has devised a special cannula and metal abdominal plate for retaining the tube in a fixed position. An ordinary stiff rubber tube will suffice. With the tube connected to a receptacle, the patient may be permitted to drink as freely of water as thirst demands.

H. J. VAN DEN BERG.



Anterior aspect of opened stomach, showing condition of pylorus and gastrojejunostomy opening. (Walton.)

Walton, A. J.: Congenital Pyloric Stenosis. Ann. Surg., Phila., 1914, lx, 342

By Surg., Gynec. & Obst.

The author reports a case of a male infant suffering from congenital pyloric stenosis. A posterior gastro-enterostomy was performed, the opening being made so as to lie vertical and as close to the pylorus as possible. The opening was one and onehalf inches in length, and the junction was made in the usual way with four sutures by the aid of clamps. The edges of the mesocolon were sutured to the junction and the abdominal wall was closed. Vomiting ceased from the time of operation; the patient steadily improved, and gained two pounds and ten ounces in one month. Seven months afterward there was a recurrence and the patient died.

At post-mortem, the peritoneal cavity was found to be free from adhesions and the stomach was not dilated. The pylorus was markedly thickened and hard, having a tumor-like mass three-fourths of an inch in length. The mesocolon was adherent to the line of junction and there were several membranous adhesions running from the mesocolon to the jejunum. There was a free passage through the gastro-enterostomy opening which was large enough to admit the gloved finger easily. Microscopic section showed that the thickening of the wall was due to a great hypertrophy of the circular muscular coats. EDWARD L. CORNELL.

Strauss, A. A.: Two New Methods of Closure of the Pylorus for Pyloric and Duodenal Ulcer. J. Am. M. Ass., 1914, lxiii, 1525.

By Surg., Gynec. & Obst.

Two new ideas in pyloric closure are presented and supported by experimental work on dogs.

The author first discusses the various procedures used at the present time in obtaining pyloric closure and points out reasons for their failure. He states that those depending on some form of ligature around the pyloric muscularis fail at all times, owing to a resultant anæmic necrosis and a sloughing of the ligature inward. This is brought about mainly by the powerful peristaltic waves that, aided by intra-abdominal pressure, sweep toward the pylorus. The substitution of fascia for the ligature has the disadvantages of absorption and the formation of

dense adhesions around the pylorus. The author exposes the pyloric region through a right rectus incision. Grasping this firmly with the thumb and forefinger, an incision, 1.5 inches in length, proximal to the sphincter on the upper outer surface, is made down to the mucosa. This is then freed from the muscularis all the way around after the muscularis is everted. A free fascial transplant 0.75 by 1.5 inches is introduced around the mucous tube and sutured to it at one end. Drawing this tight enough to occlude the mucous membrane, the free end is then sutured overlapping. The incision in the muscularis is closed, care being taken to include the fascial band in two or three sutures to prevent sliding. The suture material is No. 2 braided wax silk. Then follows the gastro-enterostomy as near as possible to the occluded pylorus.

Of sixteen dogs thus operated on, all made uneventful recoveries and were on full diet within six days. One dog was killed at the end of two months and the pylorus examined. It was found to be absolutely closed and the transplant unabsorbed. A histological report of the tissue is added.

The author has a second method, in which around the proximal side of the pyloric sphincter, without exposing the mucosa, an ordinary white silk rib-bon, three-fourths of an inch wide, is sutured tight enough to obliterate the lumen.

In 12 dogs operated on by this method, necropsies from five days to five months later showed tight closure of the pylorus, very little necrosis, and the ribbon covered by glazed, transparent tissue. In 6 of these dogs a rubber band was used. All the dogs died in from five to eight days owing to the rubber cutting through the tissues.

The author's conclusions are: (1) The fascial transplant maintains a tight closure of the pylorus, is not affected by peristalsis, and is not subject to the formation of adhesions. (2) The shelling out of the mucosa is safe, as there is no danger of hæmorrhage or infection. (3) While the silk-ribbon method is safe and sure, it leaves too large a foreign body in the tissues. PHILLIPS M. CHASE.

Hess, A. F.: Duodenal Catheterization and Feeding in Infants. Interst. M. J., 1914, xxi, 953 By Surg., Gynec. & Obst.

The instrument used for catherization of the duodenum resembles a simple Nélaton catheter to which an aspirating bulb has been attached, except that it is somewhat longer and is marked at the 20,

25, 30, and 40 cm. points. By means of catheterization, bile and the pancreatic and duodenal secretions can be obtained for examination. Especial attention, however, is called to the value of this procedure in relation to pyloric obstruction and its treatment. After the tube enters the stomach, peristalsis carries it into the duodenum; the introduction of a few ounces of water facilitates its passage by relaxing both cardiac and pyloric sphincters. Aspiration of bile and neutral or alkaline secretion is evidence that the duodenum has been entered.

In the author's experience, whenever a No. 15 French catheter can be inserted into the duodenum, organic stenosis is so slight that it may be disregarded. Failure to pass the catheter, however, does not prove organic stenosis - for functional

obstruction may be complete.

Duodenal feeding is of value when persistent vomiting exists, whether it is due to pyloric stenosis or spasm or not, or whether it is a complication of acute infectious disease. For the purpose of feeding, the catheter is inserted to the 40 cm. mark, then held quietly. Milk, raw or peptonized, warmed to 99°F. is introduced and allowed to run in slowly, so that the feeding takes 10 to 20 minutes. If the flow is obstructed, gentle pressure is exerted by means of the bulb. Infants cannot retain the catheter throughout the day; it must, therefore, be introduced for each feeding. It may be used every 3 to 4 hours or once or twice daily to supplement rectal alimentation, as in severe cases of grippe and pneumonia with vomiting. Local anæsthetics and drugs given to relieve muscular spasm and retching have all proved inefficient, with the possible exception of papaverine recommended by Pal and Holzknecht. LISTER TUHOLSKE.

Boardman, W. W.: Duodenal Ulcers. Calif. St. J. Med., 1914, xii, 402. By Surg., Gynec. & Obst.

After a brief general discussion of the normal and pathologic stomach as seen by the X-ray, Boardman takes up simple gastric ulcer which he recognizes by various functional disturbances. Here the possibilities are: spasmodic filling-defect in the greater curvature, spasm of the greater curvature (incisura), spasmodic hour-glass, increased peristalsis, pressure-tender point over the stomach, sixhour residue, cardiospasm. Indurative ulcer, lesser curvature, pars media, in addition to the above possibilities, may also show lessened mobility and displacement of the duodenal cap. The pylorus will probably be displaced to the left. Atony and reversed peristalsis are improbable here. Indurative ulcer about the pylorus will probably show irregularity of the antrum, pyloric canal, or cap, disturbance of peristalsis near the pylorus, fixation of the pyloric portion, increased peristalsis and sixhour residue; also there may be spasmodic manifestations and a pressure-tender point.

Perforating ulcer shows irregularity, usually on the lesser curvature, together with a shadow beyond the stomach area but closely connected with it, and unusual fixation of that part of the stomach. The possibilities are similar to those of indurative ulcer, with the addition of atony, dilatation, and reversed peristalsis.

Penetrating ulcer shows opaque material outside the stomach shadow surmounted by a small gasshadow, and unusual fixation of the stomach at one point, together with certain less definite possible findings, similar to those of other varieties of ulcer.

The author divides duodenal ulcers into simple and organic. Simple ulcer has as probabilities: normal stomach, frequently of the hypertonic type, increased peristalsis, and early emptying. There may possibly be a tender-point over the duodenum, and delayed passage through the duodenum. Organic duodenal ulcer is apt to show normal stomach. increased peristalsis, six-hour residue, and capdistortion. The possibilities are either hypertonus or dilatation, tender-point, and residue in the cap. ALBERT MILLER.

Bland-Sutton, J.: Cancer of the Duodenum and Small Intestine. Brit. M. J., 1914, ii, 653.

By Surg., Gynec. & Obst.

Primary cancer occurs more frequently in the duodenum than in the jejunum or the ileum. The author divides the duodenum into the portion above the bile papilla, the supra-ampullary segment, the portion containing the bile papilla, the ampullary, and the remainder the infra-ampullary segment.

He states that while it is claimed by many that gastric cancer usually results from gastric ulcer. he cannot be so sure of this, but that undoubtedly occasionally a chronic gastric ulcer becomes cancerous. Cancer of the duodenum is rare, but ulcer is common. The ulcer is usually situated in the first 2 cm. of the duodenum, and four-fifths of the patients are men. The only case of malignant disease found in the supra-ampullary segment of the duodenum associated with a chronic duodenal ulcer was a sarcoma. He resected the pylorus with the adjacent part of the stomach and the duodenum to within one-half inch of the bile papilla. A few days after the operation the duodenal stump leaked. Mainly pancreatic fluid escaped and excoriated the abdominal wall. By restricting the fats the secretion from the pancreas was so reduced that the fistula soon closed.

Cancer of the ampulla. Nowhere else in the body does so small a growth lead to such grave interference with digestion. The three clinical signs of cancer of the ampulla are painlessness, intense jaundice, and great emaciation. Pathologically it shows slight tendency to infiltrate the surrounding tissues, infrequently disseminates, causes enormous dilatation of the main bile-ducts and gall-bladder. It is infrequently associated with gall-stones. After jaundice has set in, death usually occurs within six months.

Cancer of the infra-ampullary duodenum. is the common place for duodenal cancer. The symptoms associated with it are like those set up by cancer of the pylorus, but the vomited matter contains bile and pancreatic juice and is often very offensive.

Cancer of the jejunum and ileum. Tumors here are rare. Some authorities claim that an accessory pancreas may be the site of cancer here. Sutton thinks there is no real evidence to support this view.

Cancer at the end of the ileum. Rarely is cancer found at the ileocæcal valve. The author finds obstructive growths at the valve are of four kinds:

Cancer arising in the ileum.
 Cancer arising in the cæcum.

3. Malignant growths in the vermiform appendix.

4. Hyperplastic tubercle of the ileum.

Cancers of the ileocæcal junction, as Sutton has seen them, have been of the circular contracting type and are easier felt than seen. It is remarkable that such inconspicuous growths give rise to widespread metastases. Cancer arising in the cæcum does not obstruct the lumen of the bowel as early as cancer arising in the colon. There is nothing in the signs and symptoms approaching the definiteness characteristic of a constricting cancer of the third part of the duodenum. The chief feature connected with cancer of the gastro-intestinal tract is its extreme frequency at the pylorus and its rarity at the ileocæcal valve. The age distribution of cancer of the small intestine agrees with that of the stomach and colon.

The appendix. The author has had only one case of primary carcinoma in this situation. The

patient was a spinster aged 30.

Hyperplastic tuberculous affections in the neighborhood of the valve. An analysis of the various growths which arise at the ileocæcal junction makes it evident that some of the tumors in this situation labelled "cancer" after operation, are in some instances tuberculous. The hyperplastic form of intestinal tuberculosis is most common in the cæcum and cæcal end of the ileum. It differs from other varieties of tuberculous disease, in that the lesion is not destructive and leads to an increase in the bulk of the part affected. The disease begins in the submucous or subserous tissue and spreads to the other coats of the bowel. The new tissue contains clumps of giant cells and sometimes calcareous deposits. Occasionally the thickened bowel is enveloped in a mass of fibro-fatty tissue such as sometimes surrounds chronic tuberculous kidneys. The cavity of the bowel is narrowed; sometimes a track no larger than a writing-quill remains, and the ileocæcal valve is obstructed; in rare cases the disease is limited to the valve. This condition is very liable on mere naked-eye examination to be mistaken for cancer of the ileum or cæcum, and it is very probable that in some cases in which the cæcum has been excised for a tumor casually regarded as cancer, and the patients have remained free from recurrence, the disease was hyperplastic tuberculous disease.

From the operative point of view the distinction between cancer and hyperplastic tubercle is not important, because the treatment for both conditions is the same—excision—but it is a matter of great concern in regard to prognosis. Cancer and hyperplastic tubercle left to run their course end fatally, but the latter is curable by excision.

Sutton mentions melanosis of the colon. He had one case associated with a constricting annular cancer of the iliac colon.

M. S. Henderson.

McGlannan, A.: Intestinal Obstruction Due to Cancer of the Colon. Surg., Gynec. & Obst., 1914, xix, 475. By Surg., Gynec. & Obst.

Cancer of the colon is easily divided into two classes: (1) those associated with obstructive symptoms, and (2) those without such phenomena. In the clinical course, pathological anatomy, and prognosis, each variety remains fairly distinct from the other. Pathologically the tumors are either adenocarcinoma or some form of solid carcinoma, scirrhous or diffuse.

In the obstructive variety the predominant tumor-cell is cylindrical — carcinoma cylindrico-cellulare — while in the non-obstructive form the cells are cuboid in shape — carcinoma cubo-cellulare. In either variety there may be goblet cells containing gelatinous or mucoid material associated with cylindrical or cuboid cells — carcinoma gelatinosum.

In the 98 cases studied 61 had an obstruction of some sort in their pre-operative histories. Here, as in all forms of obstruction, delayed operation was unsuccessful on account of the fatal toxæmia. Post-operative obstruction caused by impaction of the anastamosed bowel and leakage at the site of the anastamosis were large factors in the mortality of the fatal cases in which the tumors were removed.

The ideal operation is removal of the tumor by resection of the bowel and immediate anastamosis. In order that this may be successful the patient must be operated upon early while the obstruction is still incomplete. Later, the two-stage operation—primary enterostomy and secondary resection and anastamosis—may be required. Resection with drainage of both segments of the bowel—the protrusion operation—or anastamosis with protrusion are expedients to be considered when the condition of the patient does not warrant the ideal one-stage operation nor demand the two-stage enterostomy with secondary removal.

For irremovable tumors short-circuiting is the best operation whenever practicable; otherwise a colostomy is required, and with this a form of obturator or special dressing will minimize the discomfort of the patient.

Tietze, A.: Diagnosis of the Variety and Location of Ileus (Art und Lokaldiagnose des Ileus). Beitr. z. klin. Chir., 1914, xci, 578.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Reflex paralysis of the intestine, from kidneystone colic, diseases of the gall-bladder, torsion of the pedicle of an ovarian cyst, or torsion of the

testicle can generally be distinguished from ileus; but there is great difficulty in distinguishing disease of the pancreas from ileus. Von Walsche's teaching concerning the beginning of intestinal paresis is right so far as strangulation ileus is concerned; in it peristalsis is completely stopped, but in dynamic ileus there is generally only a segmental paralysis; as for example, in circumscribed peritonitis as a result of gangrenous appendicitis. Often in dynamic ileus, in the midst of a distended intestine there is a spastically contracted segment; this is particularly likely to occur in patients who have previously been treated with atropin. Dynamic and mechanical ileus can generally be differentiated; there is more difficulty in making a differential diagnosis between peritonitis and mechanical ileus.

Tietze has tested the truthfulness of Von Walsche's hypothesis in 133 cases that he has operated upon, and has found that in obstruction in general it is reliable: increased peritonitis was lacking only when peritonitis had already begun. On the other hand it was not found to be entirely true in strangulation ileus; among 17 cases there was active peristalsis in two. To be sure, the nutrition of the intestine in these two cases had suffered very little. The conditions with reference to peristalsis varied in invagination. Except in a few cases of volvulus of the large intestine, invagination, hernia replaced en bloc, etc., local meteorism could not be demonstrated.

Caution should be exercised in passing judgment on vomiting of blood. It is found in gall-stone ileus as well as in strangulation high up, and is not always found in thrombosis and embolism of the mesenteric vessels. Vomiting occurs earlier and more frequently in occlusion of the small intestine, later and more rarely in occlusion of the large intestine. Röntgen examination is a failure in the diagnosis of ileus of the small intestine, but a stenosis of the large intestine could be demonstrated in a number of cases after the intestine was filled with mercury.

In the discussion Küttner reported 456 of his own cases of ileus, 93 of dynamic ileus with a mortality of 60 per cent, 242 of obturation ileus with 44 per cent mortality, and 105 of strangulation ileus with 61 per cent mortality. In strangulation ileus there is much hope for the restoration of suspicious looking loops of intestine. In obstructing tumors, primary one-stage and two-stage resections are to be condemned.

Bergemann.

# Lord, J. P.: Operation for Prevention of Recurrence of Intussusception. Tr. West. Surg. Ass., Denver, 1914, Dec. By Surg., Gynec. & Obst.

The author reports an operation performed to prevent recurrence of intussusception in a child of eight months who had just been relieved of the third severe attack within five and one-half months. The symptoms were characteristic and in the first two attacks relief had been obtained by hydrostatic pressure, inversion, and manual compression of the mass. During the last attack, the child failed to respond promptly to the usual treatment and col-

lapse and unconsciousness rapidly intervened. The child was brought 140 miles to the hospital by the family physician, who by diligent effort had succeeded in relieving the condition an hour before arrival.

The question arose as to what could be done to prevent a recurrence. As about 75 per cent of cases of intussusception are due to a mobile cæcum and ileum with the appendix acting as the exciting cause, it was advised that the appendix be removed and the cæcum and ileum be firmly anchored by shortening their mesenteries. At operation a large, long, intensely injected appendix, lying alongside of an ædematous, ecchymotic ileum with a four-inch mesentery gave ample proof of the correctness of the diagnosis. The appendix was removed and the mesenteries of the cæcum and ileum reefed with silk sutures. Recovery was complete and there has been no return.

Lord finds no record of an operation done to prevent the recurrence of intussusception, although fixation is usually done at the time of operation for the relief of intussusception in which the appendix and a long ileocæcal mesentery have been the causative factor.

Isabolinsky, M.: Bacteriology of Appendicitis (Zur Bakteriologie der Appendicitis). Zentralbl. f. Bakteriol., Parasitenk. u. Infektionskr., Jena, 1914, lxxiii, 488. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author examined fifty cases of appendicitis bacteriologically to determine the kind of bacteria present. In 43 cases he found colon bacilli in 17 cases alone, and, in the others, in association with other bacteria. Of the 17 cases in which they were found alone, none were severe; therefore the colon bacillus plays only a subordinate part in the causation of appendicitis.

Among 21 cases in which staphylococci albus were found, they were associated in 15 cases with colon bacilli; of 10 cases of staphyloccus aureus, 7 were associated with colon bacilli, the remainder with other bacteria. In six cases with staphylococci there were also Fränkel's diplococci lanceolatus, and all of these cases showed severe anatomical changes.

The diplococcus evidently played the chief rôle in the etiology of the above cases. In the 7 cases in which streptococci were found there were also severe anatomical changes. In three cases there were bacilli pyocyaneus associated with colon bacilli or staphylococci; in two there were tubercle bacilli. Both of these cases showed marked gangrenous changes and the tubercle bacilli may have played the chief part in the etiology. In five cases there were ova of ascaris lumbricoides and in 3 of trichocephalus dispar. The only bacteria present in these cases were colon bacilli, so the ova may have caused the inflammation. In three cases foreign bodies were found — grain and iron wire.

were found — grain and iron wire.

The author concludes: (1) that the etiology of appendicitis is very varied; (2) that colon bacilli

alone do not cause appendicitis; (3) that various pathogenic microörganisms that reach the appendix may cause it; (4) that there is a relation between preceding disease of the respiratory tract and following appendicitis; and (5) that worms and ova of worms may cause appendicitis. UNTER-ECKER.

Gompertz, R., and Scott, M.: The Use of an Aperient Before X-Ray Examination of the Intestine in Chronic Constipation. Brit. M. J., By Surg., Gynec. & Obst. 1913, ii, 567.

It seems that radiographers have no certain knowledge as to whether or not the presence of fæcal accumulations in the last portions of the large gut influences the rate of passage of the mixture of bismuth and food in any constant manner. Therefore, the authors have endeavored to investigate this point. Four adult males, sufferers from chronic constipation for which there appeared to be no cause in the nature of mechanical obstruction, were observed-the same procedure being employed in all. Two series of photographs were taken in each case. The first series was not preceded by an aperient; in the second the bowel was emptied by a dose of castor oil the night before the bismuth meal. Observations were made immediately at 4, 6, 12, 24, 36, and 48 hours after the bismuth breakfast and at other times when necessary. conclusions may be summarized as follows:

1. The variations between the rates of passage of the bismuth along the intestine are small, whether the bowel has been emptied by a preliminary aperient or not. Where differences are noted they

are not constant.

2. It is wise in most cases to give a purge before making an X-ray examination on account of the greater clearness of the skiagrams obtained when the intestine is empty; and on account of the discomfort which the patient, deprived of his usual aids to defecation, may experience during the two or three days necessary for the X-ray observations, during which time the aperient must be given. The results of these experiments appear to show that the conclusions reached may be accepted without the fear that they have been materially vitiated by the omission of the aperient.

EMIL C. ROBITSHEK.

Brown, P.: A Röntgenological Consideration of the Relation of Individual Type to Intestinal Stasis. Boston M. & S. J., 1914, clxxi, 581. By Surg., Gynec. & Obst.

The author calls attention to the well-known fact of the relationship between chronic joint affections and intestinal stasis. In analyzing stasis, although the causative agent is often acquired, as in adhesions, etc., he believes there is frequently a congenital predilection toward such in the shape of improperly developed alimentary organs or improper or incomplete attachments of their supports or mesenteries.

This type of congenitally deficient individual is

commonly recognized by the posture, physique, and neurotic tendencies and has been designated the "carnivorous" type, by Sir Frederick Treves, in contradistinction to the better developed, sluggish, and peaceably disposed "herbivorous" type. When the "carnivorous" child reaches the age when he assumes the erect posture, the alimentary organs prolapse and their supports become adherent in this position. Subsequent trouble arises at these fixed points which are the pyloric end of the stomach and the first portion of the duodenum, the cæcum, and the flexures of the colon. Prolapse of the organs on either side of these fixed points causes the wellknown "kinks." The resulting stasis causes infection in the duodenum, which may go on to ulceration and, following this, adhesions to surrounding organs. Secondary to this infection an infection of the gall-bladder is not uncommon, with gall-stones as a sequel. Stasis at the other points mentioned is followed by dilatation of the bowel, putrefaction of the retained contents, infection and ulceration of the mucosa, and absorption of toxins from the fæcal masses. The absorption of these toxins is in turn responsible for certain forms of joint pathology. Among these the author mentions the so-called "constitutional" diseases: chronic rheumatism, arthritis deformans, and gout. He believes the cure for these diseases lies in the recognition of faulty intestinal absorption as an important factor in their etiology, and he makes a plea to the general practitioner to be on the alert for these cases of congenital deficiency and to so direct the rearing of such children that their inherent defects shall be nullified. G. W. GRIER.

Benjamin, A. E.: Substitute Operations for Lane's Radical Method in the Treatment of Intestinal Stasis. Tr. West. Surg. Ass., Denver, 1914, Dec. By Surg., Gynec. & Obst.

Intestinal stasis has now become one of the most important studies in the field of medicine and surgery. So many diseases are attributed by investigators to infectious micro-organisms within the intestinal tract due to stasis that the topic is frequently discussed.

The symptoms of this disease are numerous, varied, and complex, so that an erroneous diagnosis is frequently made and the symptoms present are

attributed to other causes.

The disease is occasionally seen in children and may have a foundation in congenital defects or bands which tend to inhibit the natural peristaltic action of the bowel. On the other hand, the disease may be overcome in childhood in most instances or prevented by early, careful, systematic exercise and by adhering to hygienic rules.

The disease is not due to the presence of infectious micro-organisms in the colon, but to the reflux of this infection into parts unaccustomed to the presence of these germs and the ready absorption of the same from these parts, even damming back as far as the pylorus, dilating the duodenum, and

interfering with the normal emptying of the stomach.

The presence of infectious micro-organisms within the bowel, especially in the colon, may result in an inflammation and transmigration of the infectious micro-organisms through the walls of the intestines producing adventitious bands in addition to the congenital bands present, further interfering with the bowel action, resulting in further obstruction and more pronounced symptoms of stasis.

The incompetent ileocæcal valve would seem to be the result of stasis rather than the cause of the

same.

The diagnosis of this condition often can be made from clinical symptoms present but a definite location of the kink or primary cause should be determined by the use of bismuth and X-ray screen examination or by skiagram before operative procedure is undertaken.

The treatment should be begun in early childhood when there is any tendency or suspected condition which might favor the development of intestinal stasis; at which time further development of the disease often can be prevented and the symptoms

frequently overcome.

This treatment could be further elaborated in older patients to include exercise, massage, dietetic, medicinal treatment, and hygienic and mechanical methods as well as the wearing of suitable clothing and a properly fitting corset, and possibly the elevation of the foot of the bed at night. In pronounced cases not amenable to this treatment, operative procedure should be contemplated.

The radical methods advised by Lane—ileosigmoidostomy or colectomy—seem seldom justified, as in the former operation there results a loaded and filled up, redundant, and useless colon; and in the latter operation, numerous pronounced adhesions which ultimately can and do lead to the recurrence of stasis; and furthermore, these operations, especially the latter, are followed by an un-

warranted mortality rate.

Simple operations free from danger consist in the relief of constricting bands and the reduction of unnecessary enlarged pockets, such as a dilated cæcum, by means of the plication operation and the replacement of the prolapsed colon and stomach by its mechanical elevation and suturing of the gastrocolic omentum to the peritoneum lateral to the median incision as well as the borders of the incision, and possibly the shortening of the gastrohepatic omentum, and even the elevation of the stomach by means of the Rovsing operation. These operations, prevent the recurrence of kinks and favor the normal flow of fæcal contents, all raw surfaces being covered with omental grafts or peritoneum.

This treatment followed by dietetic, mechanical, and hygienic methods brings satisfactory results in the majority of cases. In other more pronounced and well selected cases, the operation of cæcumsigmoidostomy would seem rational and possibly

satisfactory, but further investigation, research, and experiments should be followed up to determine whether this method will prove satisfactory to the patient as well as to the surgeon.

#### LIVER, PANCREAS, AND SPLEEN

Chesney, A. M., Marshall, Jr., E. K., and Rowntree, L. G.: Studies in Liver Functions. J. Am. M. Ass., 1914, lxiii, 1533.

By Surg., Gynec. & Obst.

The authors report a series of investigations to determine (1) whether functional changes can be demonstrated in anatomically diseased livers, (2) in what types these changes are most marked, and (3) the diagnostic values of these changes.

The functions of the liver in health are: (1) The glycogenic, or the conversion of monosacchrids into glycogen, its storage, and its reconversion into dextrose; (2) the nitrogenic, or conversion of certain nitrogenous bodies into urea; and (3) the produc-

tion of bile.

The following tests of liver functions have been used: for the glycogenic, Strauss' levulose, and Bauer's galactose tests were used; for the nitrogenic, the nitrogen partitions in the blood and in the urine were made; for the test of production of bile, studies on the urine and fæces for urobilinogen were made with doubtful success. For the fibrinogenic function the heat coagulation method of Whipple was used. To determine the lipolytic activity of the blood Soevenhart's method was employed. As a test for hepatic function, the fæces and urine were examined after phenoltetrachlorphthalein had been administered. Goodpasture investigated the fibrinolytic ferment.

A summary is given of the findings in 42 cases consisting of cases of liver cirrhosis, myocardial insufficiency, carcinoma of the liver, pernicious anæmia, syphilitic hepatitis, and polyserositis. The results of these examinations are admirably shown in two large tables. In this series 5 cases came to autopsy and the pathological findings confirmed the functional findings in every instance.

The relative values of the tests are given below:

1. Phthalein. An output in the fæces below go per cent or its appearance in the urine is infrequent in health and frequent in disease. There are three undesirable features of this test: (a) In certain instances the amount of red color is such that accurate estimation is difficult. (b) Thrombosis frequently follows at the point of injection, but this has never occasioned serious discomfort. (c) There is a liability of chill and rise of temperature after injection unless great care is taken to have the salt solution made only with freshly distilled water.

2. Fibrinogen. Low values are frequent in cirrhosis and may be of prognostic value. This test is inapplicable in the presence of severe anæmia.

3. Lipase. Results furnish little or no diagnostic or prognostic information although the test requires little apparatus or time.

4. Glycogen. These tests yielded very little information of value. The ingestion of levulose is rather uncomfortable to the patient.

5. Fibrinolytic. This ferment is only present in liver cirrhosis and hence is of great diagnostic value.

6. Blood nitrogen partition. Urea nitrogen was especially low in cases of advanced cirrhosis while amino-acid nitrogen was high. These examinations cannot be made in cases of severe anæmia.

7. Urinary nitrogen partition. Ammonia and ammonitrogen were increased in most cases, especially in cirrhosis. Care should be taken to exclude

acidosis.

The conclusions are:

1. Outspoken functional changes of the liver can be demonstrated.

2. Functional changes in cirrhosis, neoplasm of the liver, and cachectic conditions are most marked.

3. There is harmony in the findings in some of the cases; i.e., all show either a decrease or a normal function. Others show a striking lack of

4. The authors believe the phthalein, fibrinogen, and nitrogen partition in blood and urine tests is of great value in revealing functional involvement in the liver. The demonstration of a fibrinolytic ferment is of decided diagnostic importance.

PHILLIPS M. CHASE.

Else, J. E.: Strictures of the Gall-Bladder. Surg.,

Gynec. & Obst., 1914, xix, 482.

By Surg., Gynec. & Obst.

Strictures of the gall-bladder may be either congenital or acquired. In 62 consecutive post-mortems upon babies, mostly new-born, strictures

were present in 11.29 per cent.

Congenital strictures are of three types: (1) Annular strictures, which do not markedly interfere with the size of the lumen. (2) Strictures due to the projections of folds of the inner layers into the lumen. These are not, properly speaking, strictures, but they partially, and occasionally completely, obstruct the lumen. (3) The elbow deformity of fundus stricture which is the most common congenital form. In this type the fundus is bent upon the body of the gall-bladder. The three inner coats are involved in the deformity, while the serosa and subserosa pass over the deformity. A fold extends into the lumen similiar to that described in the second variety.

Acquired strictures arise from (1) destructive lesions beginning with the mucosa; (2) intramural infections; (3) pathological lesions beginning with the serosa; (4) adhesions; (5) perforating wounds; (6) chronic indurate processes; and (7) malignant

tumors.

The clinical significance of strictures of the gallbladder is that they interfere with proper drainage, and hence serve to harbor infection as well as aid in stone formation. The acquired type may serve as an etiological factor in the development of malignancy. Following an operation the scar

formation may make the lumen smaller than before. If strictures of the elbow type are not recognized. the gall-bladder may not be completely closed and the bile may leak into the peritoneal cavity.

The report is based upon the study of 1,100 gall-

bladders removed post-mortem.

Einhorn, M.: Direct Examination of the Duodenal Contents (Also Bile) as an Aid to the Diagnosis of Gall-Bladder and Am. J. M. Sc., 1914, cxlviii, 490.

By Surg., Gynec. & Obst. of Gall-Bladder and Pancreatic Affections.

The author attempts to show that by the examination and study of duodenal contents it is possible to determine whether or not the gall-bladder or the pancreas are affected. He lays down the following

rules:

1. The macroscopic appearance of the bile is of great diagnostic import. If it is golden-yellow and clear, it usually indicates a normal gall-bladder. When the fresh bile looks greenish-yellow and is somewhat turbid, it portends a diseased state of the gall-bladder, which frequently contains gall-stones. Golden-yellow bile containing mucus is frequently observed in catarrhal jaundice. A pure goldenyellow bile may, however, occasionally exist notwithstanding the presence of gall-stones.

2. The pancreatic function may be gauged by examination of the duodenal contents containing

bile and pancreatic secretions.

3. The presence of the three ferments in sufficient quantities speaks for a normal activity. If one of the ferments is constantly absent, it usually indicates chronic pancreatitis. A tumor of the pancreas may, however, exist notwithstanding the presence of all three of the ferments. This apparently surprising fact finds its explanation in the circumstance that the tumor has still left enough healthy tissue in the remainder of the pancreas to continue its function in an undisturbed manner. Similar conditions are occasionally encountered in other organs affected by growths-the stomach, kidney, etc.

4. Duodenal contents persistently revealing neither bile nor evidences of pancreatic secretion speak for a mechanical obstacle just above Vater's

papilla—usually stone.

The preparation of the patient consists in having the patient in the fasting condition, inserting the tube before retiring, or about half an hour after the ingestion of a cup of tea with sugar or bouillon, the patient having taken the duodenal tube early in the morning a few hours previous to the examina-

For the examination of the pancreatic juice the

patient is prepared in the same way.

The duodenal contents is obtained by aspiration through the duodenal tube. Occasionally on aspiration of the duodenal contents at first only a clear or slightly amber-colored fluid is obtained. It is of alkaline reaction and contains the pancreatic ferments. Usually after waiting a short time, and

after repeated aspirations, a golden-yellow fluid, containing bile, appears. This has no diagnostic significance. If, however, after aspirating and waiting only pancreatic juice but no trace of bile appears, it may be of some importance, particularly in cases of chronic jaundice. If bile is present in the duodenal contents, a complete occlusion of the common bile-duct can be excluded. The absence of bile and presence of pancreatic juice indicates that the seat of the obstruction is above the common A. C. STOKES.

Crile, G. W.: Anoci-Association in Relation to Operations on the Gall-Bladder and Stomach. J. Am. M. Ass., 1914, lxiii, 1335.

By Surg., Gynec. & Obst.

The author reviews the records of 803 operations on the biliary tract and 333 operations on the stomach. The clinical course of certain patients after gastric resections and after common-duct operations is similar in many respects. The mortality rate for these operations is in the vicinity of ten per cent. This high rate is explained by the author in several ways. The condition of the patient is usually relatively poor. According to Crile's theory of anoci-association the lowered resistance of the patient results in an acid condition of the blood, whether this lowered resistance is produced by starvation, fear, infection, insomnia, physical exertion, ether anæsthesia, traumatism during operation, or post-operative pain.

This acid condition of the blood is explained by Crile as being due to a lessened activity on the part of the liver in its. function of neutralizing acids formed by tissue decomposition. It follows that operations in the region of the stomach or liver are very apt to traumatize or interfere with the function of nerves supplying the liver, and in this

way interfere with its function.

The treatment is of little avail unless it is preventive. Prevention consists in increasing the store of energy and stopping the expenditure of energy and the consequent fabrication of acid. The first end may be accomplished by increasing the intake of food and water, by the administration of sodium bicarbonate and glucose, and by having the patient sleep in the open air. Energy may be conserved by limiting physical activity and, so far as possible, eliminating worry and anxiety before the operation, and by diminishing acid production during and after the operation by complete anociassociation. JAS. H. SKILES.

Jacobson, J. H.: Anastomosis of the Gall-Bladder to the Stomach: Cholecystogastrostomy. Am. J. Obst., N. Y., 1914, lxx, No. 5.

By Surg., Gynec. & Obst.

Jacobson has collected from the literature the case reports of 16 instances where this operation has been employed and adds the record of a case which he himself operated upon. He describes the technique of the operation and concludes:

I. The operation of cholecystogastrostomy has the same indication as that for cholecystenteros-

2. The presence of bile in the stomach after cholecystogastrostomy does not interfere with digestion or cause the patent any inconvenience.

- 3. The operation is very easy to perform, therefore it offers palliation and prolongation of life to a class of cases which, as a rule, are considered inoperable.
- 4. On account of the small danger of ascending infection it should be the choice of methods when it becomes necessary to anastomose the gall-bladder to the alimentary tract. N. SPROAT HEANEY.

Morris, D. H.: The Rôle of the Spleen in Blood Formation. J. Exp. Med., 1914, xx, 379. By Surg., Gynec. & Obst.

Experiments were performed by the author upon rabbits, cats, and dogs. The blood was examined from the splenic artery, splenic vein, mesenteric vein, and, for purposes of control, from a peripheral vein. Careful counts were made in each case both of the red and white corpuscles, and differential counts from stained specimens. Careful autopsies were made on all the animals.

The differences found may be summed up as follows: (1) The number of both red and white corpuscles per cubic millimeter in the blood of the splenic vein is greater than that of the artery. (2) Large mononuclear leucocytes appear in great excess in the splenic vein. (3) The blood of the inferior mesenteric veins differs from that of the splenic vein in being relatively richer in small mononuclear cells and poorer in large mononuclear

The conclusion reached by the author is that the spleen is a blood-forming organ of prime importance in the animal metabolism. The fact that the organ can be extirpated without causing death does not mitigate against this conclusion, since its work may be in part assumed by other organs, such as the hæmolymph-nodes, bone-marrow, and adenoid tissues in general. JAS. H. SKILES.

Kreuter: Experimental Study of the Peripheral Blood Picture after Extirpation of the Spleen (Experimentelle Untersuchungen über des periphere Blutbild nach Milzexstirpation.) Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

GULECKE, of Strassburg, tells of the removal of the spleen in two cases of pernicious anæmia. The patients seemed to improve at first but died the second week. He advises against the operation when the hæmoglobin content is less than 20 per cent and the number of red cells less than a million.

SEEFISCH, of Berlin, reports extirpation of the spleen in a case of chronic myeloid leukæmia, preceded by röntgen treatment. He recommends the method in similar cases.

Von Eiselsberg, of Vienna, has performed extirpation of the spleen in 20 cases, 4 for hæmolytic icterus, 7 for pernicious anæmia, and 3 for thrombophlebitis. He reports results in some cases that were operated on years ago. He had an operative mortality of 15 per cent. He operates under local anæsthesia or sometimes with slight inhalation anæsthesia. In rats and mice, extirpation of the spleen seems to favor the development of implanted cancers, and he thinks the same may occur in man.

FLÖRCKE, of Paderborn, lost a case of pernicious anæmia after the operation. In another case the red blood-cells rose in the course of six months from one to five million, but the blood picture never became normal. The changes in the vessels described by Eppinger did not appear in either of his cases. He recommends treatment with thorium-X before

operation.

Anschütz, of Kiel, has removed the spleen in two cases of hæmolytic icterus. Both patients improved after the operation, but the resistance of the blood-cells was still decreased in one case, which may have been due to the influence of a supernumerary spleen. In the second case, epileptiform convulsions occurred three days after the operation.

EXNER, of Vienna, reports a case operated on over a year ago, in which Decastello reports the

blood picture as almost normal.

Hartel, of Munich, says that in human beings only two cases of true supernumery spleen have been reported; both occurred in cases where splenectomy had been performed and therefore are to be regarded as substitute organs. Generally it is only a question of the growth of pieces of spleen that have been scattered in rupture of the spleen.

KUTTNER, of Breslau, in an autopsy after extirpation of the spleen, found 100 true spleens which had certainly not been there before. He does not think that extirpation of the spleen in leukæmia is justified

by Seefisch's case.

WULLSTEIN, of Bochum, extirpated a spleen reaching to the iliac fossa in a very sick child two months old. Recovery from the operation was uneventful, and the patient is getting along very well.

JENCKEL, of Altona, has performed the operation five times. In the two cases of pernicious anæmia he did not see any good effects. One case proved afterwards to be syphilis, and tabetic crises developed. Jenckel is very skeptical as to the indications in pernicious anæmia.

FRIEDRICH, of Königsberg, emphasizes the good effect in hæmolytic icterus. Küttner's case died in his forty-fifth year of extraordinarily severe arteriosclerosis. The aorta was hard as wood; moreover there was a multiple xanthomatosis of

the extremities.

MÜHSAM, of Berlin, regards spontaneous hæmorrhage in pernicious anæmia as a contra-indication. He lost two cases of this kind from the operation. He has never seen such improvement in the blood picture as reported by the Vienna authors. He has not had good results either from preliminary treatment with thorium-X or from after-treatment with arsenic.

KATZENSTEIN.

Karsner, H. T., Amiral, H. H., and Bock, A. V.: A Study of the Influence of Splenectomy and of Certain Organs and Organ Extracts on the Hæmopsonins of the Blood Serum. J. Med. Research, 1914, xxx, 383. By Surg., Gynec. & Obst.

In the course of investigations of the relation of the spleen to blood changes and to jaundice Pearce and Austin found an increase in the number of endothelial cells of the lymph-nodes and noted that most splenectomized dogs that succumbed to an injection of hæmolytic immune serum, within 48 hours showed much phagocytosis of red corpuscles by these cells and by the stellate cells of the liver capillaries. These observations suggested the possibility that, in the absence of the spleen, the function of producing endothelial cells phagocytic for erythrocytes (normally a function of the spleen and to a much less degree of the lymph-nodes) becomes highly developed in the latter organs.

Accordingly the following study was carried out by the authors in order (1) to confirm Pearce and Austin's observations, (2) to study the hæmopsonic content of the blood of normal dogs as compared with that of splenectomized dogs, (3) to study the hæmopsonic content of the venous blood returning from various organs of the body, (4) to study the influence of various tissue extracts on hæmopsonic activity, (5) to compare the effects on hæmophagocytosis of extracts of the lymph-nodes of normal

and of splenectomized dogs.

From their series of experiments the authors draw

the following conclusions:

r. Provided the spleen has been removed for a period of time less than a week and more than two days, the intravenous injection of a specific hæmolytic immune serum, in doses large enough to produce hæmoglobinuria, is followed by marked phagocytosis of erythrocytes by the endothelial cells of the lymph-nodes and liver. In the lymph-nodes the process starts about three hours after the injection of immune serum, reaches its height about 24 hours after the injection and is practically complete in 48 hours, when the endothelial cells are found to contain large quantities of pigment, presumably as the result of blood destruction.

2. A study of hæmopsonins of the blood serum under the experimental conditions indicated in the text fails to show that the phagocytosis of erythrocytes, so prominent in the lymph-nodes of the splenectomized animal following a fairly large intravenous dose of specific hæmolytic immune serum, is dependent upon local or general variations in hæmopsonin in the splenectomized animal or is influenced by organ extracts of normal and of splenectomized animals.

George E. Beilby.

#### **MISCELLANEOUS**

Walscheid, A. J.: Visceral Ptosis. Internat. J. Surg., 1914, xxvii, 335. By Surg., Gynec. & Obst.

According to the author, the main etiological factor of visceral ptosis is a disturbance of intra-

abdominal pressure. This is brought about mainly in two ways: (1) by a drooping undeveloped thorax, resulting in a loss of tone of the diaphragm, and (2) by a relaxation of the abdominal muscles, resulting in "pot belly." Other subsidiary causes are heredity and neglect in childhood, mental and physical exertion with poor resistance, overtaxing an undeveloped capacity; chronic diseases, such as tuberculosis, chlorosis, rheumatic diathesis, pregnancy, lipomatosis, abdominal adhesions, and the wearing of a corset not properly fitted.

The treatment consists in fixing the dependent organs by suturing in position. Post-operative treatment consists in a series of breathing and calisthenic exercises to stimulate diaphragmatic function and the use of electrical sinusoidal currents to the respiratory, abdominal, and erector spine muscles.

J. H. SKILES.

Winslow, R.: Penetrating Wounds of the Abdomen. J. Am. M. Ass., 1914, lxiii, 1165.

By Surg., Gynec. & Obst.

In considering penetrating wounds of the abdomen Winslow divides them into two classes: (1) those occurring in civil practice, and (2) those occurring in military service.

In the treatment of penetrating wounds in civil service, he strongly advocates laparatomy early in all cases where the proper hospital and surgical facilities can be obtained.

The palliative treatment is advocated in military service, because for obvious reasons laparatomy can not be resorted to on the field, and by the time the patient is in a hospital it is too late.

Winslow and his assistants have treated 44 cases, 6 without laparatomy, of which 4 died. In penetrating wounds of the abdomen in which laparatomy was done 55 per cent recovered; in perforation of

hollow viscera 48.5 per cent recovered; in gunshot wounds with perforation 40 per cent recovered; in stab-wounds with perforation 83 per cent recovered; in cases in which the liver, spleen, and other structures were injured but without perforation of a hollow viscera 36 per cent recovered. Of those with perforation of the stomach alone 45.5 per cent recovered. Of those with perforation of the intestines alone 51.75 per cent recovered.

EUGENE CARY.

Dalziel, T. K.: Practical Points in Abdominal Surgery. Glasgow M. J., 1914, lxxxii, 249.

By Surg., Gynec. & Obst.

The stomach and duodenum are discussed in this paper. In regard to deformities the pylorus is frequently stenosed. The symptoms usually appear the first few weeks and consist of persistent vomiting of everything eaten, obstinate constipation, marked peristaltic waves, tumor mass, and rapid loss in weight. The treatment is almost always operative and the operation recommended by the author is a pyloroplasty. The operation consists of a longitudinal incision over the pylorus down to, but not including, the mucosa. The incision is then sewed up transversely, thus making a larger lumen. Several cases are reported by the author.

Acute dilatation of the stomach is one of the gravest post-operative complications. It manifests itself by frequent vomiting, pain in the epigastrium, and visible distention of the organ. Lavage is the best means of treatment, although gastro-enterostomy is rarely necessary. Chronic dilatation of the stomach is not so frequent and usually results from an obstruction of the pylorus. Surgical treatment consists in pyloroplasty or gastroenterostomy.

J. H. Skiles.

## SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Slocum, R. B.: Bone Regeneration. South. M. J., 1914, vii, 822. By Surg., Gynec. & Obst.

The author reports a case in which the lower third of the tibia was crushed, but the fibula was not damaged, and the ankle-joint was not involved. Two inches of the bone was punched out, and there was practically no periosteum left, except, possibly, a narrow ridge along the border of the interosseous membrane. A gutter was made with fascia and allowed to fill with blood-clot, after the method of Hass. After the swelling had subsided the leg was put up in plaster. At the end of fifteen weeks there was complete bony union, so that the patient could walk. There was still, however, a slight sinus to the bone, but there was no shortening.

The author quotes Lewis' conclusion that bone may unite after fracture, or a space fill in after resection, without the aid of any periosteal or bony ridge, and that transplanted fascia may be made to take up the nutritional and limiting functions of the periosteum.

Archer O'Reilly.

Weil, S.: Experimental Study of Periosteum Regeneration (Experimentelle Untersuchungen zur Frage der Periostregeneration). Beitr. z. klin. Chir., 1914, xci, 664.
By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

When defects are artificially made in the periosteum, no regeneration of periosteum takes place, but the gap is filled in with scar tissue, under which the surface of the bone shows aseptic necrosis. Along the edges of the defect in the periosteum new bone is formed that may far exceed the normal bone in thickness.

KIRSCHNER.

Schabad, J.: Metabolism in Congenital Fragility of the Bones (Der Stoffwechsel bei angeborener Knochenbrüchigkeit). *Pädiatria*, 1914, vi, 81, 195. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

After a review of the literature on the disease the author describes a case of his own. The patient was the third child of parents who were related to each other. The oldest is normally developed and healthy; the second was an abortion. The patient was born with a fracture of the humerus; there was curvature of both humeri and femurs at birth. Up to seven years of age she had had 12 fractures: 4 of the femur, 4 of the humerus, 3 of the ribs, and 1 of the lower leg. In the röntgen picture the smallness and frailty of the diaphyses of all the long bones was noticeable; the cortex was very thin; the narrow cavities increased in size; there was marked callus formation in the humerus and femur. The patient was under normal in size and was very frail.

Studies of metabolism showed that the patient assimilated three times less calcium than normal children of the same age with the same nutrition. Further studies in metabolism were undertaken under different medications; calcium assimilation was found to be best under phosphorized cod-liver oil and hypophysochrom; it was poorest under thyroid preparations, and moderate under arsenic. Hypophysochrom caused diarrhæa, and during the treatment a new fracture appeared, so the author got satisfactory results only with phosphorized cod-liver oil.

Connell, F. G.: Giant-Celled Tumor of Bone. Tr. West. Surg. Ass., Denver, 1914, Dec.

By Surg., Gynec. & Obst.

The multiplicity of terms used to designate giant-celled tumors of bone shows the indefiniteness of all of them. A theoretical distinction may be made between the various tumors, but clinically and microscopically this distinction may not always be apparent.

That such tumors are benign or comparatively non-malignant was probably first recognized by Koenig and emphasized by Mikulicz. In this country Bloodgood has been an enthusiastic and consistent advocate of the benignancy of such newgrowths, and his assumption has to a large extent been accepted; yet the fact that a malignant type of such a tumor does occur brings into prominence the question, "What is a giant-cell sarcoma?" The answer is not definite, and the usual definition does not prevent differences of opinion.

One group of authorities considers the giant-cell a mere incident and that the matrix in which the giant-cell lies is responsible for the clinical features. Mallory emphasizes the fact that there are giant-cells of different types: one a benign foreign body giant-cell and the other a tumor giant-cell.

This lack of a common understanding relative to this tumor is shown by reference to a reported case in which eminent pathologists each made a different diagnosis of a section from this type of bone tumor. It would seem that a diagnosis of sarcoma can not be made from the histological picture alone.

It has been claimed that metastases from giant-cell tumor of bone do not contain giant-cells. A case from the literature is quoted in which metastatic nodules in the lung secondary to amputation of the arm and local recurrence showed giant-cells.

The author reviews the usual microscopic, macroscopic, X-ray, and clinical characteristics, and cites two cases, one a foreign body giant-cell tumor of the antrum, which was perfectly well eight years after an incomplete operation. The other case was a giant-cell sarcoma of the upper end of the tibia, in which curettage and carbolic acid and alcohol cauterization were followed by local recurrence. The tumor spread in spite of two additional curettages and cauterization. Amputation was immediately followed by satisfactory results.

The conclusions are:

1. A diagnosis of giant-cell sarcoma is not sufficient. Such a tumor is usually benign, but may be malignant.

2. The diagnosis should be made regardless of the presence or absence of giant-cells.

3. The giant-cells should be differentiated into either foreign body or tumor giant-cells.

4. The prognosis is more favorable with the foreign body type.

5. Giant-cells have been found in metastases in the lung.

The marked difference of opinion regarding this condition is evidently due to there being a number of entirely different pathological processes as yet undifferentiated that are being classed together.

Jones, S. F.: Primary Sarcoma of the Lower End of the Femur Involving the Synovial Membranes. Ann. Surg., Phila., 1914, lx, 440. By Surg., Gynec. & Obst.

The author gives a very full and carefully prepared clinical and pathological report of a primary sarcoma of the knee-joint; the rarity of the condition being shown by the fact that this is the eighteenth authentic case in medical literature.

Several features of the case are of unusual interest. It is the youngest case on record of a primary synovial sarcoma of the knee-joint. It occurred in a seventeen-year-old girl. It early resembled, clinically, a tuberculous involvement, that being the provisional diagnosis made upon the first examination of the knee.

There was rapid increase of fluid in the kneejoint; pain was absent at first, but later was very severe, coming on after complete immobilization for three weeks. Aspiration showed the fluid to be serosanguineous. There was only slight atrophy, and that only in the calf muscles; there was a slight impairment of joint motion, but absence of crackling or crepitation on motion.

The radiographic findings on first examination were negative, emphasizing the point that the X-ray in sarcoma of the bone does not always

demonstrate pathological lesions which are present and may, therefore, be misleading. Careful pathological examinations should be made of every joint case before radical surgical procedure is undertaken.

The discussion of the pathological report emphasizes the fact that some giant-cell sarcomata are benign and others malignant, and that each case must be studied by itself to determine whether the giant-cell found is benign or malignant, one variety being of endothelial origin formed from the endothelium of blood-vessels, and the other a true tumor-cell indicating high malignancy.

H. W. WILCOX.

Brown, D. D.: Rheumatoid Arthritis. Brit. M. J., 1914, ii, 666. By Surg., Gynec. & Obst.

Though no definite figures are given, the author states that 70 per cent of all cases of rheumatoid arthritis are due to pyorrhœa. Medication, he believes, is well worth while. He places his reliance mainly on creosote or guaiacol, which he administers in the form of a cachet (guaiacol carbonate, grains 5; guaiacol resin, grains 5); if the pain is severe, he prescribes calcii acetosal, grains 5, with quinine sulphate, grains j; these he gives on alternate weeks with some form of iodine, and in most of these cases he also gives thyroid extract, grains j, two or three times daily. Electricity and massage he considers very important adjuvants.

M. S. HENDERSON.

Axhausen, G.: The Origin of Free Bodies in the Joint; Their Relation to Arthritis Deformans (Die Entstehung der freien Gelenkkörper; ihre Beziehung zur Arthritis Deformans). Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author thinks that König's theory of the origin of free bodies in the joints is proved; that is, that they originate from reactive dissecting processes in the neighborhood of a primary injury to the joint. A study of the so-called premonitory stages of joint bodies proves this. An injury to a circumscribed part of the joint leads to local and general reactions. The local phenomena are regenerative in character; the general ones, whose nature is not well understood, are in accordance with what is mistakenly called consecutive arthritis deformans. The local processes are first a transformation of dead cartilage into living fibrous cartilage by the migration of cells from neighboring living cartilage, and second in the absorptive and dissecting action of transformed marrow-subcartilaginous subcartilaginous section. If subcartilaginous dissection predominates there is a disintegration of the circumscribed injured area of the joint from the mechanical effect of exfolia-

Although the author agrees with König's view as to the formation of the bodies, he agrees with Barth that the cause of the primary injury to the joint is trauma. The mechanics of trauma of the knee-joint

is almost always a collision of the patella with the cartilage-covered surface of the femur through direct violence from the front or from the side. This is readily understood, for here, at the most exposed place, cartilage rests upon cartilage. This explains the localization of the defects, 60 per cent on the anterior cartilage-covered surface of the femur and 30 per cent on the posterior surface of the patella. This also explains the fact that both sites are so frequently involved.

quently involved.

As a certain histological proof of the traumatic origin of free bodies in the joints, the author demonstrated injuries to cartilage that were surrounded on both sides by zones of marked degeneration of cartilage. This was also true in cases where there was no history of trauma. The practical deduction from this is that, since the free body is frequently only a part of the injured area in the joint, simple removal of solitary bodies is not sufficient. Free opening of the joint is indicated, in order to examine the site of origin of the free bodies and to remove any injured cartilage. This is the only way to exclude injurious effects that may follow from the leaving behind of necrotic areas of cartilage. Other forms of traumatic arthritis deformans are also caused by lesions of the cartilage. Therefore, arthrotomy should be resorted to much more frequently than it has been heretofore, not only in the cases where the dissecting process can be demonstrated in the röntgen picture, but even when the röntgen picture is negative if there are signs of lesions of the cartilage. Arthritis deformans juvenilis of unknown etiology is also the result of marked traumatic arthritis deformans, and therefore it is amenable to operative treatment. The author reports a number of good results from these extended indications for operation,

In the discussion, BARTH of Danzig stated that he had previously taken up the question. He believes that free bodies arise from traumatic or arthritic processes or from a combination of the two.

GOETJES pointed out the significance of the crucial ligaments in the origin of such bodies. He observed foreign bodies in three cases where the cartilage was torn out by the action of the crucial ligaments. The cause of such an injury may be very slight, a slight misstep being sufficient to produce joint-mice after a time.

KATZENSTEIN.

Marshall, H. W.: Several Practical Features Associated with the Management and Treatment of Obscure Arthritis. Boston M. & S. J., 1914, clxxi, 595. By Surg., Gynec. & Obst.

The author discusses the difficulties and successes which are encountered by the specialist in the management of some of the more obscure joint diseases. He calls attention to the constant search for new remedies for treating arthritis, and claims that a better understanding and application of correct principles in handling these cases will bring more satisfactory results than any single specific measure.

A closer coöperation between the general practitioner and the specialist will increase the success of all concerned. Improving the possibilities of home treatment is another important line of advance.

Matters of personal hygiene and knowledge of the many physiological relations between the different organs of the body will continue to be factors of the greatest importance in the treatment of these ROBERT B. COFIELD. conditions.

#### Jones, R.: The Treatment of Arthritic Deformities. Brit. M. J., 1914, ii, 741. By Surg., Gynec. & Obst.

The author reviews his work on the deformities of chronic arthritis. He believes that most of the deformities are preventable if the disease is recognized early and proper treatment begun; that in view of ankylosis the joint should be allowed to become fixed in the position of greatest usefulness. He states that in children most deformities can be corrected by manipulation during the active stage of the disease, but that osteotomy is preferable for the reduction of the detormity in older people in which there is sound fibrous ankylosis. hip-joint he recommends a transtrochanteric osteotomy with division of the adductors. In disease of the vertebra he recommends fixation of the spinous processes by the methods of Hibbs and Albee, or by his own method which consists in laying a bony transplant in a groove made in the lamina at the bases of the spinous processes.

Arthroplasty may be looked upon as a valuable and successful procedure. The character of the intervening substances whether bone, fascial flap, fat, or muscle, is not so important as good technique, perfect asepsis, and sound judgment. Arthroplasty at the elbow or hip is most favorable. The results in the knee are not so encouraging. It is contraindicated in the young, in the presence of disease, in cases where prolonged ankylosis and infiltration have destroyed the muscles, or where scar tissue around a joint endangers the vitality of the flaps.

Finally, in the painful progressive deformities, such as osteo-arthritis of the hip, he recommends the prevention of friction of the tender joint surfaces, and describes his operation on the hip in which he chisels off the great trochanter, preserving its muscular attachments, removes the neck of the femur, and nails the trochanter over the acetabulum.

DE FOREST P. WILLARD.

#### Jones, R.: Internal Derangements of the Knee. Surg., Gynec. & Obst., 1914, xix, 427.

By Surg., Gynec. & Obst.

The author relates his personal experience with mechanical derangements of the knee-joint. Displacement of the semilunar cartilage is considered in detail, also the mechanism of such displacement, its diagnosis and treatment. Eighty per cent of the cases have shown injury to the internal cartilage, and the cartilage is usually displaced while the leg is moderately flexed and then forcibly abducted. Some few cases, however, have occurred during extension. In nearly all instances the cartilage is displaced inward and may show a variety of lesions.

The most common symptom of displaced meniscus is a sudden inability to extend the leg, this condition being present immediately after the injury. A few cases show such locking only after a considerable length of time after the injury. Following the initial trauma there is usually a synovitis. This synovitis disappears early, and then the patient is up and about until the knee locks again and the syndrome is repeated. It is usually at this stage that the patient is seen. In the differential diagnosis, hyperplastic fringes, lipomata, and semidetached bodies are considered. Manipulative reduction should be attempted in recent injuries. The leg is acutely flexed, the surgeon then rotates the tibia inward and, at a given signal, the patient is forcibly aided to extend the leg. If this fails and in the other class of cases where the cartilage has been out for some time, operation is indicated.

Mention is made of the details of the author's technique for arthrotomy; namely, the flexed position of the leg, the incision being made through bichloride gauze and all sutures handled with instruments. Such pedantic asepsis is insisted on. The remarks concerning displaced cartilage are based on considerably more than 1,000 operations of

this condition.

Cases are often seen in which loose bodies prevent the normal knee movement. Sometimes they constitute an entity; at other times they are a part of an osteo-arthritis. In either case the treatment is removal. In such removal it is necessary to split the patella longitudinally to gain free access to the body.

Extra-articular osteomata also cause locking of the joint. The modus operandi of such locking is by direct interference with the controlling muscles

and tendons.

The diagnosis of ruptured crucials is discussed. The operative treatment is considered to be discouraging, preference being given to absolute rest

for several weeks.

Fractures of the tibial spines are often seen. In this injury, on attempting full extension of the limb there is a feeling of definite bony block, and this should be differentiated from the obstruction experienced in displaced cartilage. Immediate open operation is indicated in these cases, the median longitudinal incision being employed and the spines removed.

# Oliver, P.: Myositis Ossificans Following a Single Trauma. J. Am. M. Ass., 1914, lxiii, 452. By Surg., Gynec. & Obst.

This malady follows severe traumatism such as dislocation, and is found most commonly in middleaged men. The favorite site is at the elbow-joint, after trauma or dislocation, and in the thigh muscles, although the condition may be found in other muscles.

The character of the process is the formation of spongy bone in the muscle. Microscopically, in the early stage it shows degenerated muscle, blood pigment, red cells, young connective tissue, osteoid tissue, and later on typical cancellous bone. After trauma a lump appears at the site of the injury and continues to grow for several weeks. Heterotopic bone, as far as is now known, is caused by two agencies only: skeletal osteoblasts and young granulations in contact with calcified areas. It is believed by many that osteoblasts come from the periosteum and grow in the pulpified tissue or bits of periosteum and are drawn or pulled into the muscle. The condition may cause trouble or not, depending on the location of the injured area. process is not a "myositis," but is either a metaplasia of connective tissue or a periosteal growth. Pathological findings seem to indicate that it is the same as the so-called parosteal or exuberant callus.

Many believe the outcome will be favorable if the condition is left alone. Some advise immobilization after severe injury to the favored points of occurrence. All are agreed that operation should not take place until several months after the injury. Some be-lieve operation does more harm than good, while others report good results from the removal of the C. C. CHATTERTON. calcified area.

Murphy, J. B.: Ischemic Myositis; Infiltration Myositis; Cicatricial Muscular or Tendon Fixation in Forearm; Internal, External, and Combined Compression Myositis with Subse-

quent Musculotendinous Shortening. J. Am. M. Ass., 1914, lxiii, 1249. By Surg., Gynec. & Obst.

The author believes that the condition clinically known as Volkmann's contracture is an ischemic myositis resulting from a too tight splint (external compression), or hæmorrage or effusion into the muscles (internal compression), or both. It is not due to arterial or venous obstruction, for the former leads to dry gangrene and neither of these is present in these cases. The damage is all done in the first forty-eight hours after application of the bandage. The muscular contraction and flexion deformity, however, do not become apparent for many weeks. There is no nerve involvement unless the nerve is especially compressed. Those cases in which there is paralysis and elongation of a muscle, as in the toe-drop during a Buck's extension treatment, are due to degeneration of the axis cylinder processes of the motor nerves.

The most prominent symptom in the early stage of the condition is intense pain. There is swelling of the hand, stiffening, and finally complete loss of motion in the fingers. The contraction deformity is the result of scar formation following the destructive inflammation and atrophy of the muscle-cells.

To avoid the occurrence of myositis a compression splint or tight constricting cast should never be immediately applied to a fractured limb. The reduction and replacement of fragments can be accomplished six to ten days later as well as on the day of the fracture. An elbow should never be acutely flexed immediately after the accident. Bandages and splints should never be applied for

the purpose of reducing a fracture. It may be necessary to split the fascia on the antero-ulnar side of the forearm to relieve a persistent cyanosis.

For correcting the deformity the author employs the method of tendon lengthening by open operation. Each tendon is cut by the half-through incision on opposite sides, connected by a longitudinal incision, and sutured together again with silk. To obtain complete extension it is also sometimes necessary to divide the joint capsule at the wrist. It is essential to separate the tendons from each other by flaps of fascia and fat to prevent general adhe-The hand is then put up in a splint with hyperextension at the wrist and finger-joints. After ten days voluntary flexion and extension is encouraged, but should not be forced to a degree causing pain. In all the author's cases, five of which are reported, there was no case in which practically full power of flexion and extension was not obtained.

W. A. CLARK.

Fagge, C. H.: Injuries of the Semilunar Cartilages. Guy's Hosp. Gaz., 1914, xxviii, 403.

By Surg., Gynec. & Obst.

The author concludes that lesions of the kneejoint are infrequent in America, since the American literature on the subject is scanty. German literature is also very limited. At the Royal Victoria infirmary at Newcastle-on-Tyne, 156 cases of operation for semilunar cartilage injuries are reported in one year. Martin of Newcastle reports 449 cases, 62 per cent of which were miners. It is generally agreed that injury of these cartilages is usually caused by the indirect violence of forcible rotation when the knee is semiflexed, and that the internal cartilage is the one usually affected. With the rotation there is almost always a beginning extension with tightening of the ligaments to which the cartilage is attached, resulting in a tearing of the latter. It is easily demonstrated that in flexion there is a shrinking of the joint toward the center and that with extension the cartilages tend to be expressed out of the joint cavity. Diagnosis is very difficult in the early stages. Differentiation must be made between chronic synovitis with thickening of the ligamentum mucosa, "melonseed bodies," which are organized particles of synovial exudate, and isolated synovial fringes. Most cases are under thirty years of age. A snapping or clicking knee is usually due to disturbance in the movement of the external cartilage. It is not advisable to operate at the first attack. The knee should be firmly bandaged and maintained as nearly extended as is comfortable without a splint. A knee locked in flexion may be released by first fully flexing, then extending with inward rotation. Incision for exploration should be large enough for the purpose and is best done with the knee in flexion. The author uses a vertical incision. Although the idea that the knee-joint is especially susceptible to infection is dying out, it is important never to ignore the risk of sepsis. Weakness or stiffness is

not likely to follow the operation, but in elderly patients a tendency to degenerative arthritis may be accentuated.

W. A. Clark.

Speed, K.: Injuries of the Great Toe Sesamoids. Ann. Surg., Phila., 1914, lx, 478.

By Surg., Gynec. & Obst.

In a short but interesting article well illustrated the author discusses the anatomy, causes, and treatment of these injuries, dwelling chiefly on fractures which he says are due to direct violence: (1) squeezing of the great toe between heavy masses; (2) falls from a height, the body striking with the whole weight on the foot; (3) sudden increase of weight-bearing force when carrying heavy weights and missing the footing with the force expended through the great toe-joint.

The symptoms simulate metatarsalgia or rheumatism. Palpation gives little information, but a good X-ray shows separation of the fragments of the sesamoid long after the foot has recovered from the more severe injury that usually masks the condition—the symptoms usually not appearing until

weight-bearing is resumed.

Treatment by pads, plates, etc., has not been successful, the symptoms continuing until an operation was performed to remove the fragments. This operation is best accomplished through a lateral incision just above the line of tough plantar skin on the inside of the foot. Both bones should be removed, for if this is not done the one remaining will protrude so far as to give similar symptoms later.

C. E. Wells.

#### FRACTURES AND DISLOCATIONS

Henderson, M. S.: End-Results in Fractures. Tr. Northwest. Railway Surg. Ass., Chicago, 1914, Dec. By Surg., Gynec. & Obst.

Different men hold varying views as to end-results in treating fractures according to the material which comes to their hands. The surgeon treating recent fractures in men engaged in the active pursuits has an optimistic view of the end-results. The orthopedic surgeon, on the other hand, is rather pessimistic, as the end-results he sees are all bad. Non-union or delayed union is usually brought about by inadequate and insufficient fixation or by allowing too short a time. Complete bony union is slow to occur. Experimental work shows that bony union occurs in 83 to 150 and 175 days.

Fractures of the neck of the femur are troublesome in the old cases since there is usually marked absorption of the neck with consequent shortening. With early diagnosis and adequate fixation much better results are obtained in these cases. Late operations are not satisfactory and the author describes one in which bone transplantation was done. Fractures of the ankle or Pott's fracture frequently give poor end-results due not to poor primary care but to inadequate after-care. These patients should be

provided with a raised inner sole to the shoe, outside iron, and inside T-strap to throw the weight on the outer side of the foot before weight-bearing is permitted. Fractures in the region of the elbow frequently show limitation of motion due to excessive callus formation. Lack of flexion is most inconvenient and can best be prevented by treatment of these cases in acute flexion and supination. Passive motion vigorously applied is too often the cause of excessive callus formation and tender joints causing restriction of motion. Quite often fractures of the shaft of the femur operated on by the Lane plate subsequently bow outward because of too early weight-bearing. It is not out of the ordinary to keep these patients off the fractured leg six months, and better results are insured.

In reviewing these cases of bad end-results, the striking point is not that the primary care was poor or inefficient, but that the after-care was not controlled or carried out with the fixed purpose of treat-

ing each case as a law unto itself.

Parker, R.: The Use of Small Bone Fragments in Ununited Fracture. Proc. Roy. Soc. Med., 1914, vii, Surg. Sect., 275. By Surg., Gynec. & Obst.

The author proposes a method for the stimulation of bone growth in cases of non-union. The method is an application of the principles of bone growth as brought forward by Sir William Macewen, consisting of the clipping off of the ends of the bones and inserting between them all the unossified material after its removal. The pieces are merely crumbs of bone and remain in contact with each other and with the main fragments. This filling together with the hæmorragic tissue is supposed to ossify and produce firm union.

W. A. Clark.

Watson, J. H., and Snowball, T.: The Improvisation of Apparatus in the Treatment of Certain Fractures in Modern Warfare. Lancet, Lond., 1914, clxxxvii, 849. By Surg., Gynec. & Obst.

In a second article the authors take up the treatment of fractures of the upper arm, especially those received in recent wars. They consider that for the compound comminuted fractures received from projectiles in battle the best results looking to the prevention of deformity and shortening can be obtained by the use of a modified Borchgrevink splint, the construction and application of which

they describe.

It consists of a crutch-shaped, soft wood splint, properly padded and placed in the axilla and along the inner side of the arm. Adhesive plaster straps applied to the inner and outer aspects of the arm, in connection with an elastic rubber-tubing arrangement, serve to exert traction upon the lower fragment. Its advantages, as set forth, are that it is comfortable, not easily displaced, permits any degree of traction likely to be required, and the amount of pull is easily regulated. It has been tried in many severe fractures and has been found to be efficient.

H. W. Wilcox.

Hartshorn, W. E.: A Suggestion Regarding the Treatment of Fractures about the Elbow-Joint. Med. Rec., 1914, lxxxvi, 752.

By Surg., Gynec. & Obst.

The author prefers the acutely flexed position rather than the semiflexed position in the treatment of fractures about the elbow-joint, especially fractures of the external and internal condyles.

He describes and illustrates an ingenious method of securing the acutely flexed position by the application of narrow adhesive strips around the arm and forearm beginning at the elbow, the strips overlapping to the wrist and shoulder, the arm being thus held in acute flexion. Other wider strips passed around the chest and over the opposite shoulder serve as supports. The skin of the arm and forearm is protected by a gauze bandage.

ARTHUR J. DAVIDSON.

Mouchet, A.: Late Paralyses of the Ulnar Nerve, Following Fractures of the External Condyle of the Humerus (Paralysies tardives du nerf cubital à la suite des fractures du condyle externe de l'humerus). J. de chir., 1914, xii, 437. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In fractures of the external condyle of the humerus late paralyses of the ulnar nerve sometimes occur as late as sixteen to twenty years afterward. Moreover, there is always a marked valgus of the ulna, and the external condyle is frequently very much displaced and can be felt in its abnormal position. The röntgen picture shows a fracture of the external condyle with more or less marked dislocation of the

fragments.

The results of the fracture are changes in the static conditions of the joint. The median half of the olecranon fossa is more taken up by the olecranon, and this is followed by hypertrophy of the internal condyle and a flattening out of the groove for the nerve. The result of this is valgus of the ulna that is sometimes very pronounced. As a result of the fracture, which is sometimes continued into the joint, periostitis often arises. A further result of the fracture of the condyle is more or less displacement of the head of the radius. The ulnar is in its proper position, but shows signs of inflammation and degeneration of individual axis cylinders. The groove for the nerve is frequently decreased in size, or even almost completely obliterated. The nerve can then be moved slightly in a transverse direction. Because of the changes in the joint the nerve is placed under tension over the internal border of the olecranon, especially when the arm is extended. Operation is always indicated in such cases.

Operations that cannot be commended are simple neurolysis, creation of a new canal for the nerve, and displacement of the ulnar nerve to the flexor side of the arm. The author recommends a supracondylar wedge-shaped osteotomy on the inner side of the humerus, after removal of the external condyle. The ulnar nerve is not injured in this operation; it is not necessary even to see it. He reports three cases

treated in this way. After the fragments are placed in the right position—the bone can be broken manually after the wedge-shaped excision—a Velpeau's bandage is applied and left on for two weeks, when it is renewed. In the author's cases, the pain in the nerve and the reddening of the little finger disappeared in two days. The results were very

Saar, G. von: Treatment of Supracondyloid Fracture of the Humerus by Plastic Operation on the Joint (Zur Behandlung der Fracture humeri supracondylica mittels Gelenkautoplastik). Deutsche Zischr. f. Chir., 1914, cxxviii, 29. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In supracondyloid fracture of the humerus, which is so frequently observed in children, an ideal result is often prevented by the complex nature of the fracture, the interposition of muscle between the fragments, or the failure of the short-sighted parents to take the child to a physician for treatment. In such cases the author advises operation. The humerus, particularly the distal fragment, is dissected, the superfluous callus removed with the chisel, and the interposed soft parts with knife and forceps. After reposition of the fragments they are wedged to each other; in most cases the peripheral fragment is pointed and pushed into a groove in the central fragment. In some cases the opposite procedure may be used. Generally, flexion and extension may be secured immediately after the operation by passive movements. The distal fragment, on which the periosteum should be preserved as far as possible, generally takes and is completely viable.

Von Saar describes six cases operated upon by this method and reports brilliant results, although recovery was complicated by a rise of temperature in some of the cases. After-treatment consists of the usual measures employed in ankylosis of joints. This method is to be recommended in all cases of old, badly healed fractures with marked interference with motion, and in irreplaceable cases. The work contains detailed case histories and illustrative

Vorschütz.

röntgen pictures.

Fabian, E.: Treatment of Fracture of the External Condyle of the Humerus by Extirpation of the Free Fragment (Zur Behandlung der Fractura condyli externi humeri mittels Exstirpation des freien Fragments). Deutsche Ztschr. f. Chir., 1914, cxxviii, 409 By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Among 24 cases of fracture of the external condyle of the humerus, 9 were operated on: 4 times by replacement and nailing of the fragments, 4 times by total and once by partial excision of the external condyle. The indication for operation was marked functional disturbance. Of the 4 cases treated by total excision only one showed a satisfactory functional and cosmetic result after one to one and threefourths years. All the others showed more or less valgus; limitation of motion; and snapping, crack-

ing, and grating on motion.

Fabian draws the conclusion that excision is primarily useful in old cases with functional disturbance, but that it may also be used in recent cases in the so-called rotation fractures, when non-operative replacement is not successful. PLENZ.

## Anglin, W. G.: Subtrochanteric Fracture of the Femur. Canad. M. Ass. J., 1914, iv, 894. By Surg., Gynec. & Obst.

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The author proposes what he believes to be the best non-operative method of treatment for the

subtrochanter fracture of the femur.

Most fractures of the upper third of the femur are due to great violence, and they present the displacement, flexion, abduction, and anterior rotation of the upper fragment, the lower fragment dropped backward and pulled up with the resulting shortening of limb, eversion of foot, and deformity of thigh. He believes the Hodgen splint is best suited to fracture of this type.

The apparatus and mode of application is described in great detail. The apparatus consists briefly of two parallel bars of metal, connected at both ends, curved at the upper end to fit the body at Poupart's ligament. The parallel bars are slightly bent at the knee, and the lower end is about six inches from the foot. Canvas strips are

used as a hammock to rest the limb on. The entire apparatus is suspended.

The author uses coaptation splints and Buck's extension to help retain good position. He believes that the results are better, the patient is handled with less care, and is more comfortable, than with any other type of apparatus.

C. C. CHATTERTON.

## Whitman, R.: A Critical Analysis of the Treatment of Fracture of the Neck of the Femur. *Ann. Surg.*, Phila., 1914, lx, 485.

Ann. Surg., Phila., 1914, Ix, 485.

By Surg., Gynec. & Obst.

After twenty-five years of study the author finds that these fractures are usually incomplete; so that while the immediate result is usually most satisfactory, coxa vara frequently develops with resulting disability. The abduction method which he advocates utilizes natural leverage, ligamentous tension, and muscular relaxation to correct the deformity and appose the fragments. It is at odds with the established principles and practice which insist that impaction shall not be disturbed and that repair will not occur, the treatment in all cases having been influenced by that of the old and feeble cases, and consisting essentially of traction in the line of the body, which, if effective at all, is only so in cases having constant supervision. The results in these cases were so poor that the British Committee classed only 22 per cent as good.

It is evident that repair can take place only when the fragments are in contact, and to secure this is the primary object of the abduction method of treatment. The method is so poorly understood that it is given in some detail.

The patient, under anæsthesia, is placed on a pelvic support, a pelvic bar for counter-pressure being usually employed, and the extended limbs held by assistants. The normal limb is abducted to the normal limit. The injured limb is first rotated and flexed to disengage the soft parts, then completely extended and put under traction by an assistant to overcome shortening, while at the same time rotation is corrected and the limb brought into a position of full abduction corresponding to that of the other side. Care is taken that the pelvis is level and the limbs in exact correspondence in every particular, and in this position a plaster spica is applied from axilla to toes. By these manipulations shortening is overcome, and the fragments brought and held in apposition by the tense capsule aided by muscular tension. Early functional use is encouraged, and the prognosis is good, not being adversely affected by age, as is shown by Whitman's statistics which show that of 20 patients between 24 and 46 years of age, 6 had good results; of 30 between 45 and 60 years, 8 had good results; and of 30 over 60 years, 5 had good results. The article is well illustrated by photographs and X-ray plates. C. E. Wells.

# Pettit, J. A.: The Extension Treatment of Fractures of the Neck of the Femur: Its Occurrence in Elderly Subjects. Northwest Med., 1914, vi, 303. By Surg., Gynec. & Obst.

One-third of all the fractures of the aged are of this type. Changes in the bone, senile osteoporosis, and lessened resistance make the chances of recovery less likely. Many cases are only half treated and in many instances results are not expected. Pettit proposes and describes in detail a type of treatment he has found to be very satisfactory. It is a modification of the Maxwell-Ruth method of extension and counter-extension.

A good reduction is of paramount importance. The apparatus consists of a Hodgen splint giving linear extension, and a stirrup and weight at the upper end of the femur giving lateral extension. The result of these two forces is a pull in line with the neck of the femur. The advantages of this method are that the patient has more freedom, can sit in bed and change from side to side, and is much more comfortable than with the common dressings.

Photographs are shown of four cases, 63 to 84 years of age, in which functional results were obtained.

C. C. Chatterton.

#### Barnes, W. S.: Immediate Bone-Transplantation in Compound Comminuted Fracture of the Tibia and Fibula. Surg., Gynec. & Obst., 1914, xix, 541. By Surg., Gynec. & Obst.

Barnes reports a case of compound comminuted fracture of the tibia and fibula in a woman, 59 years of age, in which he performed a bone-trans-

plantation, using one of the tibia fragments for the

transplant.

The operation was done three days after the injury. The skin was badly crushed and the tibia severely comminuted for a distance of five inches. All loose fragments were picked out and one of these, five and one-half inches long and about three-eighths of an inch thick, was placed in sterile solution and later was transplanted into the gap in the tibia, the ends being embedded in the medullary canal of the tibia fragments above and below, and given additional security by catgut loop fixation. The transplant was free of periosteum and its asepsis not assured. The operation was undertaken to save the leg and the results justified the risk taken. Nine weeks after the operation there was a solid bony union and growth was progressing steadily.

Schultze, E. O. P.: Habitual Luxation of the Shoulder (Die habituellen Schulterluxationen).

Arch. f. klin. Chir., 1914, civ, 138.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Schultze has made after-examinations of the 26 cases of habitual luxation of the shoulder treated in the Berlin University clinic since 1908. Sixteen operations were performed on 14 patients. The operation consisted in making an anterior longitudinal incision, separating the deltoid with a blunt instrument, laying bare the anterior surface of the joint capsule, and, in most cases, opening the joint. No examination of the interior of the joint was made. The edges of the wound in the capsule were drawn over each other and sutured together. In some cases the capsule was decreased in size by suturing without opening. There were no peculiarities observed in the capsular tissue, except that sometimes it was very thin and easily torn.

The operation can be called a success only when there has been no recurrence for at least two years. The last patient was operated on only a year and a half ago, and of the other 13 only 6 are cured, and 2 of these do not feel altogether safe. Three of the failures were in bad epileptic cases, and recurrence took place after only a few months; therefore decreasing the size of the capsule by suture does not give very certain results, and it is to be noted that some of the non-operated cases, treated by Desault's bandage, Hoffa's bandage, or blood injections into the joint cavity, remained free of recurrence.

In order to determine the causes of the failure of treatment, Schultze made a series of studies on corpses, after he had found from the history of all the cases observed that the primary dislocation had followed either hyperabduction or hyperextension of the arm. The examination of the cadaver showed that it was not a question of a longitudinal tear in the capsule, but that the capsule was torn away from its insertion to the scapula or humerus. After reposition the wound edges did not come together and the gap was filled in with elastic cicatricial tissue. If this condition was imitated in the cadaver by the insertion of a strip of fascia into the gap, the

arm could easily be redislocated. Suture of the capsule from the anterior side could only be successful if it was performed as near the midline as possible, and if, after incision, a large extent of the capsule surface was superimposed. After simple stretching of the capsule no dislocation occurred, at most a subluxation, and separation of the muscles caused only a slight sinking down of the arm. There was never rupture of the muscle insertions or cartilaginous sections of the glenoid cavity in the cadaver.

Clinically, bone injuries are very rare in habitual dislocation of the shoulder; dislocations primarily due to injuries of the tuberosities are also rare. The injuries to the muscles and interior of the joint are in the majority of cases a secondary result of habitual dislocation. In one case, in an epileptic, there had been complete absorption of a section of bone above the greater tuberosity, which was regarded as traumatic softening without previous direct fracture of the tuberosity. It is important to get good röntgen pictures, preferably stereoscopic views. In some cases there was a fine linear shadow perpendicular to the axis of the joint at the site of the supposed tear of the capsule; sometimes there were also periosteal proliferations of bone on the humerus at the site of the tear. A changed radius for the curvature of the head and a lengthening of the neck is a result of long-continued habitual dislocation. A slight flattening of the head, on the other hand, may be regarded as constituting a predisposition to habitual dislocation, as well as defective torsion; that is, there is too small an angle of inclination between the plane of the head and that of the shaft. The majority of cases arise from hyperabduction.

Schultze demands that for operation there must be a free view of the joint cavity. An opening from behind with temporary sawing through of the bone can only be recommended when there are graver injuries. More effective is reluxation of the head, by which free bodies and bits of cartilage can be removed. In rupture of the insertions into the tuberosities, the muscle insertions should be sutured by Müller's method; in suture of the capsule, the axillary route of Schlange and Thomas is to be preferred: viz., suture at the lower border of the pectoralis major, pushing aside of vessels and nerves, suture with internal rotation and elevation of the arm. Schultze proposes to narrow the capsular space in the transverse direction and to quilt on a flap of fascia which is fixed to the point of insertion of the capsule to the bone with two nails.

BERGEMANN.

#### SURGERY OF THE BONES, JOINTS, ETC.

Albee, F. H.: Original Surgical Uses of the Bone-Graft. Surg., Gynec. & Obst., 1914, xviii, 699.

By Surg., Gynec. & Obst.

The author's report is based on an experience gained from 253 human bone-graft cases in a period

of three years, also a large amount of animal experimentation, both macroscopic and microscopic, devoted to the study of the bone-graft when used in ways similar to the technique employed in human

These include 178 cases of Pott's disease, 16 wedgegraft corrections in cases of congenital club-foot, 17 inlay grafts for ununited fractures of the long bones, and 14 paralytic foot deformities; the remaining cases include bone-grafting for fixation of tubercular ankle, repair of osteomyelitic cavities, transplanting astragalus for the head and neck of the femur, the correction of paralytic drop-wrist, deformity of the tibia following fracture, underdevelopment of the jaw, fixation of tubercular knee, reinforcing the bony deficiency and muscular weakness in spina bifida, in conjunction with arthoplasty for paralytic dislocation of the hip, congenital dislocation of the hip, paralytic scoliosis, restoring depressed nasal bridge, fixation of tubercular sacro-iliac joint, ununited fracture of the spine, ununited fracture of the femoral neck, congenital absence of tibia, replacing bone deficiency following removal of osteosarcoma, mobilizing ankylosed hip and carpus by use of osteocartilaginous grafts.

For each class of cases the author describes his operative technique and post-operative treatment in detail. He also gives case histories, shows numerous photographs and skiagrams taken before and after treatment and drawings illustrating his

technique.

It is the author's experience, borne out by other workers, that the bone-graft is a trustworthy surgical agent when taken with its enveloping membranes and contacted with bone. His successes have been practically 100 per cent. The bone-graft apparently acts always as a stimulus to osteogenesis of the bone into which it is engrafted or contacted. When well contacted, the bone-graft becomes immediately adherent to the recipient bone by newly formed tissue which becomes solid bone within four weeks' time. From his experience with bone-graft the author recommends its use whenever possible instead of metal internal splints. R. O. RITTER.

Oechsner, Autoplastic Bone-Grafting. J. F.: Surg., Gynec. & Obst., 1914, xix, 531. By Surg., Gynec. & Obst.

The two cases cited by the author show the rapidity of bone regeneration during the first year of critical X-ray and clinical examinations, demonstrating that the rapid bone development was in all probability due to the use of a sufficiently large bone-graft with its periosteum attached, and demonstrating that all the histologic factors in bone regeneration were responsible for the rapid growth.

In the second case, even though suppuration occurred in the graft and several dead spiculæ were removed, the regeneration of bone went on uninterruptedly, so that while asepsis is strictly urged it does not follow that infection means the death of the graft, particularly where the infection is localized and limited. The radiographs show a steady growth of bone, so the prediction can be made that the bone will be restored entirely to the normal. Measurements of cases also show that the bone which was grafted has grown in length so that where the epiphyses remain intact this may always be expected.

The measurements in the second case are as

follows:

From anterior superior iliac spine to inner malle-Before operation, affected leg, 25 inches; sound leg 261/2 inches. After operation, affected leg, 27½ inches; sound leg 28 inches.

The author's conclusions are:

1. The autogenous transplantation of bone is an

established surgical procedure.

2. Whether dependent for growth on periosteum or upon the graft as a scaffold for the development of blood-vessels, transplants for the present should be provided with both, particularly plenty of periosteum.

 Non-absorbable material had better be avoided wherever possible; dovetailing and absorbable suture material should be used in their stead.

4. It is highly probable that organized bone tissue will in the future take the place of foreign material now used in the Lane plates for fractures.

5. For the present the thorough applicability of heterogenous grafts has not been established.

6. Bone-grafting should never be done in the presence of an active infection.

7. Most rigid asepsis should be exercised.

8. Bone-grafts probably owe their virility and ultimate success to the rapidity of blood-vessel development plus the presence of osteoblasts wherever they may be.

o. Growth in the length of bone may confidently be predicted in the case of children when the

epiphyses remain intact.

Hesse, E.: Restoration of the Crucial Ligaments of the Knee-Joint by Free Transplantation of Fascia (Ersatz der Kreuzbänder des Kniegelenks durch freie Fascientransplantation). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author reports a case in the Obuchow Hospital, St. Petersburg, in which the crucial ligaments.

of the knee-joint, which had been destroyed by trauma, were successfully replaced by the free trans-

plantation of fascia.

The patient, a 40-year-old man, fell from the third story, with the result that there was marked lateral mobility of the knee-joint; the crucial ligaments were ruptured; the tibia was displaced anteriorly; and the ligamentum proprium of the patella was ruptured. Grekow operated two weeks after the accident with the patient under intravenous hedonal anæsthesia. The tibia was reduced and only short fragments of the crucial ligaments were left on the surface of the tibia. After strips taken from the fascia lata had been fastened to the femur by boring holes through it, they were sutured crosswise with the remnants of the crucial ligaments left on the tibia. Since suture of the ligamentum proprium of the patella was not successful, the gap here was also bridged over with fascia lata. Healing was by first intention; the functional results were good, and there was no lateral movement.

Fauntleroy, A. M.: Amputations. Med. Rec., 1914, lxxvi, 702. By Surg., Gynec. & Obst.

The surgical attitude toward the removal of limbs has undergone quite a change in recent years. Aseptic surgery, recent advances in blood-vessel surgery (suture, anastomosis, and transplantation), Bier's hyperæmic treatment, arthroplasties, transplantation of bone to fill defects, and röntgen therapy have enabled the surgeon to avoid amputations which formerly would have been necessary.

When once the indication for amputation has been established there are two main factors to be kept in mind: (1) the safeguarding of the patient's life and (2) the securing of a useful, painless stump. The patient's general resistance is of great importance in the first of these. Where shock is present resistance should be strengthened by energetic treatment with stimulants such as brandy, ether, atropin, morphine, infusion of salt solution, or transfusion of blood. When the operation can be postponed the time should be devoted to building up the patient and making a careful examination of the various organs, administering any corrective treatment that may be necessary. The application of Crile's anoci-association principle should always be resorted to.

Securing a painless, movable, and useful stump is the greatest importance, and primary union and careful planning of the flaps are essential in bringing about the desired result. Proper arrest of hæmorrhage, careful handling of the soft parts, obliteration of the so-called "dead spaces," and the introduction of drainage—to be removed on the second day—are important factors in securing primary union. The flaps should be so planned as to conserve the length, strength, and supporting character of the member and to allow for subsequent muscular contraction.

To avoid a painful stump, which the author considers is due to the fixation of the nerve-ends in the scar, he advises pulling out the divided nerves for a distance of three or four inches, dividing them and allowing them to retract. To limit osseous formation at the end of the stump the removal of the terminal bone-marrow and a periosteal cuff as recommended by Bunge, or one of the osteoplastic bone-covering flap methods may be used. Next to painful stump, disturbances of function are of importance. The joint on which the stump hinges may become partly or wholly ankylosed. To avoid this the splint should be removed as soon as primary union has occurred and the joint freely and passively exercised. Disturbances with the lever action of the stump may be brought about by irregularity of muscular action. This may be prevented by carefully anchoring the severed tendons to the periosteum or by adjusting the opposing muscles over the end of the bone.

In choosing the "site of election" the author follows the accepted teaching. He believes that in amputation of the forearm and wrist the plastic operation of Vanghetti is worthy of a trial.

FRANK D. DICKSON.

Lyle, H. H. M.: Aperiosteal Amputation. J. Am. M. Ass., 1914, lxiii, 1149. By Surg., Gynec. & Obst.

The aperiosteal method of amputation consists in denuding the stump of the bone of its periosteum for one centimeter and curetting out one centimeter of the medullary canal. The advantages of this method over the periosteal, osteoplastic, and tendinoplastic methods are that (1) it furnishes a good weight-bearing stump, (2) there are no spicules of bone from dislodged periosteum causing pain, and (3) it is the simplest method.

The osteoplastic method is serviceable only in selected cases and the technique is difficult. In case of amputation following trauma, sepsis is most likely to follow this method in which a bone flap is made to cover the end of the stump.

The periosteal method consists in covering the stump with periosteum and the results are bad, although this method is employed by the majority of surgeons.

In the tendinoplastic method a broad sheet of tendon is used to cover the sawed surface, but such a tendon is not available for every amputation.

The bad result of amputations in general is illustrated by the finding of only two weight-bearing stumps in 96 cases investigated. Our of thirteen cases performed by the oldest New York argeons, only one was found to be a good end-bearing stemp. According to Bier, the cause of pain in amputation stumps is the bony spicules growing from periosteum. In the aperiosteal method these outgrowths are precluded. Another cause of pain is said to be atrophy of the stump. This is avoided by massage and early weight-bearing after the aperiosteal am-The method originated with Bunge in putation. 1900 and had a practical test in the Russian-Japanese war. Ranzi, from von Eiselsberg's clinic, reported 31 weight-bearing stumps out of 40 cases. W. A. CLARK.

#### ORTHOPEDICS IN GENERAL

Webb-Johnson, C.: The Soldiers' Feet and Footgear. Brit. M. J., 1914, ii, 748. By Surg., Gynec. & Obst.

Since soldiers' feet must be capable of standing the stress of long marches without becoming incapicitated, Captain Webb-Johnson considers that all recruits suffering from severe types of flat-foot, hallux valgus, hammer-toe, ingrowing toe-nails, corns, and bunions should be rejected. Mild cases of flat-foot may be disregarded. Any man who cannot raise himself on his toes and restore the arch by action of the calf muscles should be rejected. He does not believe in mechanical supports for the arch, but considers exercise in the milder cases to be of use. Mild cases of hallux valgus may be improved by wearing a shoe with wide toes and straight last and by keeping the great toe in a straight line by mechanical means. Hammer-toe can be treated only by operative methods. He takes up in detail care of the feet during the campaign, and lays special stress on constant medical inspection of the feet, properly fitted and well-ventilated shoes, and the need of carefully fitted socks, which should be washed after long marches and different pairs worn on alternate days. DE FOREST P. WILLARD.

McCurdy, S. T.: Some Chronic Deformities of the Hand and Forearm.

Pittsburgh M. J., 1914, ii, 1.
By Surg., Gynec. & Obst.

McCurdy considers three types of injury: (1) fascia injuries and contractions; (2) nerve injuries and deformities resulting therefrom; and (3) tendon injuries.

Dupuytren's contraction is cited as a typical fascia injury. It is due to contraction of the palmar fascia resulting in flexion, increasing in degree. It is due to often repeated trauma to the hand; and rheumatic and specific conditions are supposed to favor it. The treatment consists in removal of the palmar fascia and retention of the hand in the corrected position for several months to prevent recurrence.

Contractions of the lorearm and wrist may result from injury to the brachial plexus, as a complication of fracture of the clavicle or dislocation of the humerus of other nerve injury associated with fracture or dislocation of the arm and forearm, or

injusy to the soft parts.

McCurdy considers Volkmann's ischæmic paralysis the most common form of this type of injury. The resulting claw-hand is of marked degree. Stretching of the muscles, as recommended by Volkmann, or tendon lengthening or transplantation may be resorted to for treatment.

Tendon injuries result in inability to move the fingers or one of its digits; mallet-finger or drop-

finger where the finger—usually the distal joint—is turned at right angles from its axis; and snapfinger where the finger is held flexed and cannot be extended or, if it is, is snapped back into flexion. Correction of the cause by uniting severed tendons, forcible or gradual correction, and retention in correcting splints are the methods of treatment recommended.

FRANK D. DICKSON.

Hibbs, R. A.: Muscle-Bound Feet. N. Y. M. J., 1914, c, 797. By Surg., Gynec. & Obst.

A muscle-bound foot is one in which dorsal flexion is limited to ninety degrees or more by a short calf muscle. A normal foot should be capable of eighty or seventy degrees dorsal flexion. This limited flexion causes a short stride and a shortened rest period for the calf muscles. Because of the heel being held elevated for so long a period there is abnormal strain on the foot due to the weight being borne on the distal ends of the metatarsals. The improper muscle action gives rise to an impaired circulation so that the feet are cold and may have slight varicosities. The patient suffers from fatigue as a result of the nervous strain as well as the local strain. The effect of this strain, especially upon growing boys and girls, is not fully appreciated; permanent damage to the organism may result. The strain should be guarded against by encouraging exercise of the leg muscles and the wearing of shoes without heels.

Two things are essential in the treatmentthe obstruction to dorsal flexion must be removed and opposing power must be developed in the anterior muscles. This is best accomplished by lengthening the Achilles tendon and putting the foot in a cast at about ninety degrees dorsal flexion, two to three months for children, and four to six months for adults, thus giving time for restoration of the muscular balance. Of thirty-eight of the author's cases, the limit of dorsal flexion was 105 to 90 degrees; all had poor circulation as shown by cold perspiring feet and all suffered from fatigue and serious impairment of walking. In all these cases the operation resulted in complete relief from all symptoms and none has had to have any further W. A. CLARK. treatment.

## SURGERY OF THE SPINAL COLUMN AND CORD

Henderson, M. S.: Some Observations on the Operative Treatment of Tuberculosis of the Spine. St. Paul M. J., 1914, xvi, 560.

By Surg., Gynec. & Obst.

The author reports 39 cases operated upon: 33 by the Albee and 6 by the Hibbs methods. He states that he would like to report them as cured, but cannot do so, and that while all the patients have been improved he considers the operation only an aid to treatment. All patients are advised to wear a brace for a year.

He advises that the operation include two vertebræ above and two below the diseased area. Each case should be studied, and operation recommended only in those cases showing bony destruction in the radiograph.

The results of the 33 cases are: one is no better; 9 are too recent to be reported; one has not been traced; 2 were cured but one of these died later of acute pulmonary tuberculosis; 12 were distinctly benefited and 13 much improved; one died later of the disease.

James O. Wallace.

Elsberg, C. A.: Laminectomy for Spinal Tumor. Ann. Surg., Phila., 1914, lx, 454.

By Surg., Gynec. & Obst.

The author bases his report on 58 operations for spinal growth, in 37 of which a growth was found. In 19 of these the tumor was intradural but extramedullary. Of those in which no tumor was found, about one-third were relieved by the operation.

The differential diagnosis between extramedullary and intramedullary tumors was shown to be difficult, as two of the cases of intramedullary growths gave a history of pain without dissociation of sensations, which is contrary to the generally accepted idea regarding such tumors. The growths are usually located higher than suspected. In one case which was operated upon at the tenth dorsal without result, a tumor was found at a subsequent operation at the first dorsal.

The author makes the incision so that the middle of it is three vertebræ higher than the sensory level. It is important to have sufficient exposure, and noth-

ing less than complete laminectomy will accomplish this—hemilaminectomy is useless. The cord should never be grasped with fingers or instruments; when necessary to move it a strip of the dentate ligament should be grasped with forceps for making traction. It is disastrous to undertake the removal of an intramedullary tumor unless it has been completely extruded from the cord. Complete recovery cannot be expected unless the operation is performed early in the disease. After several years of pressure on the cord, improvement is impossible; however, slight improvement was obtained in one case of nine years' duration.

Of 8 cases of intramedullary tumors removed or in which attempts at removal were made, 2 have almost completely recovered, 2 have slowly improved, 2 died six and eight months later, and 2 died immediately after operation. Of 12 cases from which extramedullary growths were removed, 6 are well, 3 are greatly improved, and 3 have not been benefited.

W. A. CLARK.

### SURGERY OF THE NERVOUS SYSTEM

Waugh, G. E., Evans, E. L., Sargent, P., and Others: The Resection of the Posterior Spinal Nerve-Roots—Rhizotomy. Brit. J. Surg., 1914, ii, 205. By Surg., Gynec. & Obst.

The collected reports and opinions of several individual operators are given relative to the results obtained from the section of posterior nerveroots according to the method proposed by Foerster. The reports include 58 cases, in which there were 6 deaths. The results of the operations are discussed as regards the relief of spasticity, visceral

crises of tabes, and peripheral pain.

There were 34 cases treated for spasticity, the majority of which were Little's disease. Of these 22 were improved, 8 unimproved, and 4 died. The criterion of improvement was the ability to walk. The ractors which favored success were: (1) early age, (2) normal mental condition, (3) preservation of voluntary power in the muscles, and (4) absence of contractures. In brief, the operation seemed to be of use in those cases in which spasticity was the main feature and which were best adapted to performing certain physical exercises after operation.

Five cases were treated for the relief of the gastric crises of tabes, with the result that 3 were improved and 2 unimproved.

For the relief of pain 15 cases were treated by posterior root-section; of these 12 were cured and 4 unimproved. In 3 instances the failures seemed to be due to the division of an insufficient number of nerve-roots. In the other failure the pain was evidently central in origin.

If the operation is to be successful for the relief of pain, the lesion must be localized and the nerveroots of at least one segment above and below must be included in the root-section, except in herpes or neuralgia, in which the lesion is probably in the posterior root anglia, and section of a single root may be sufficient.

BARNEY BROOKS.

Williams, T. A.: Traumatic Neurosis. Am. J. M. Sc., 1914, cxlviii, 567. By Surg., Gynec. & Obst.

The cause of traumatic neurosis is shown to be purely psychic, derived from a famo notion of the patient which induces depressing enotions disturbing to both bodily health and life remain. A clear illustration of the mechanism is that the "conditioning" of the gastric reflex of dogs by psychological stimuli whether these are pleasurable or painful. The removal of the extraneous suggestion would remedy the neurosis but for the fact that memory maintains its action; so the mental content must be modified at its foundation, and this requires considerable analysis of the patient's trends—hence the complete failure of such naïve procedures as reassurance and suggestion.

Law suits and malingering, so often interwoven with these cases, have created misunderstandings, but idemnity is not necessarily curative even of the malingerer. A case which lasted seven years after receiving heavy damages is reported.

In the complicated case, proper psychological reconstruction, made possible by clear analysis, inevitably cures, as the mechanism of neurotic disturbances after accidents differs in no way from that found in cases where there has been no accident at all. Furthermore, its nature is not so complex as to be beyond the understanding of a layman, so that its principles can readily be grasped when presented in court by an expert witness who really understands them.

### MISCELLANEOUS

#### CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSES, ETC.

Carrel, A.: Present Condition of a Strain of Connective Tissue Twenty-Eight Months Old. J. Exp. Med., 1914, xx, 1. By Surg., Gynec. & Obst.

Carrel has previously shown that connective tissue can be kept outside of the organism in a condition of permanent life. The purpose of the experiments he is now conducting is to determine the present condition of a strain of connective tissue which after having undergone 358 passages has now reached the twenty-ninth month of its life in vitro. The strain of connective tissue was derived from a piece of heart extirpated on Jan. 17, 1912, from a chick embryo 7 days old. The fragment of heart pulsated for 104 days and gave rise to a very large number of connective-tissue cells. These cells multiplied actively during the past two years, and produced a large amount of connective tissue. At present a great many cultures are obtained from the strain every week.

A comparison of the amount of tissue produced by a given culture in 48 hours this year with that produced in the same time by the same strain of cells a year ago shows that the activity of the strain has increased, and Carrel has been able to demonstrate that during the third year of independent life the connective tissue shows greater activity than at the beginning of that period, and is no longer subject to the adducte of time. He believes that if accident are excluded, connective-tissue cells. like colcules of infusoria, may proliferate indefinitely. GEORGE E. BEILBY.

Jones, F. S., and Rous, P.: The Cause of the Localization of Secondary Tumors at Points of Injury. J. Exp. Med., 1914, xx, 404. By Surg., Gynec. & Obst.

It is pointed out that the localization of secondary tumors at points of injury is a very frequent observation; for instance, it has been shown that mouse tumors may be made to localize secondarily in the liver about splinters implanted in that organ. The authors have carried on a long series of experiments in an endeavor to throw some light upon the cause of this phenomenon and the relation of trauma to the localization of secondary tumors. The results of their study may be summarized as follows:

For the experiments the peritoneal cavity has been employed as offering relatively uncomplicated conditions, and the fate of mouse tumor brought into contact with a peritoneal lining injured in

various ways has been studied.

The injection of a suspension of mouse tumor into a healthy peritoneal cavity has little success, as a rule, compared with a similar injection into the subcutaneous tissue. The authors found that the resistance of the peritoneal lining thus indicated can be largely if not completely abolished by the preliminary injection of a mechanical irritant. That the change thus brought about is independent of general immunity phenomena is shown by the fact that a local injury renders susceptible the part of the peritoneum immediately affected, and that part only. Special tests show that the factor of importance in rendering the peritoneum more susceptible is the injury to the subendothelial connective tissue. Susceptibility persists after the endothelium has regenerated over the reacting connective tissue.

Schmidt has found that the cells of tumor emboli in the pulmonary arterioles are able to penetrate the endothelium of the vessel only after they have been provided with a stroma from the subendothelial connective tissue. The authors' findings are easily explained on the basis thus suggested. A connective tissue highly cellular and perhaps still proliferating as the result of injury may well elaborate the stroma for a tumor more rapidly than normal connective tissue. Tests of growth in vitro support this idea. Connective tissue reacting to an injury grows profusely and almost immediately when incubated in plasma; whereas normal tissue from the same region usually shows no growth whatever.

Dead tumor fragments in contact with the peritoneum cause a change favorable to the lodgment and growth of later tumor fragments. It seems not improbable that the peritoneal dissemination of certain human neoplasms may be accomplished indirectly through the death of the first tumor

fragments cast off.

The authors' observations have been purposely confined to the effects of injury on the peritoneal lining; but they seem to afford the basis for a generalization. The secondary localization of tumors at points of injury may be attributed with good reason to the presence at such points of an active connective tissue capable of elaborating a stroma rapidly and abundantly; for it is the proliferation of the subendothelial connective tissue to form a supporting stroma that determines the fate of free tumor-cells, whether these lie on the peritoneum or within a vessel. GEORGE E. BEILBY.

Rous P., and Lange, L. B.: The Greater Susceptibility of an Alien Variety of Host to an Avian Tumor. J. Exp. Med., 1914, xx, 413. By Surg., Gynec. & Obst...

It has been shown by the authors that a transplantable sarcoma of the fowl, known as chicken tumor XVIII in their series, succeeds better in chickens of an alien breed—plymouth rock than in those of the variety in which it originated brown leghorn. This is not due to gross physical differences in the two breeds but to some more

subtle factor and one which perhaps acts by influencing the agent causing the tumor. It would seem that chicken tumor XVIII, as it occurred in nature, was an instance of a disease appearing spontaneously in an animal of relatively insusceptible variety.

George E. Beilby.

Rous, P., and Murphy, J. B.: Immunity to Transplantable Chicken Tumors. J. Exp. Med., 1914, xx, 419. By Surg., Gynec. & Obst.

The phenomena of natural and acquired resistance to transplanted chicken tumors strikingly resemble those observed in the case of transplanted mammalian growths; and similarly, they suggest

that the tumors have an extrinsic cause.

That there may exist in fowls implanted with a chicken tumor a resistance directed against the tumor-causing agent distinct from the resistance manifested against the alien tumor-cells has been shown in a previous article. Both sorts of resistance are present in a fowl in which a tumor has retrogressed, the resistance in such an instance being acquired. That directed against the agent is largely specific, giving little if any protection against the agents causing other tumors. There is some evidence that the conditions upon which a fowl's natural resistance depends are the same for the agents causing different chicken tumors.

It has proved impossible to protect chickens against the agent causing the simple sarcoma by injecting them with dried tumor material in which this agent has been attenuated by heat. The transfer of blood from resistant fowls to fowls with growing tumors is, in the authors' experience, void of

effect on the tumors.

Bryan, W. A.: Sarcoma. *Tex. St. J. Med.*, 1914, x, By Surg., Gynec. & Obst.

GEORGE E. BEILBY.

The author refutes the idea that there is a sarcoma age. If the tumor is more frequent in the young than in the old or middle-aged individuals, it is because people of this age are more numerous, and, even admitting this, he has seen two sarcomata in

adults for every one seen in children.

Sarcomata do not necessarily have to attain a large size before they are recognized. The laity should be taught this. It is wiser to remove a small suspicious tumor and make the diagnosis microscopically after removal than to wait for further developments. Sarcomata, as a rule, do not produce pain early. Pain occurs only when pressure or infiltration, ulceration, or inflammation set in. Pain is not pathognomonic, not constant, and is never present at the time when the tumor should be recognized and removed.

Early sarcomata are movable, except those occuring in bone, but they ultimately become fixed. Long before the tumor has immobilized itself many cells may have migrated and established themselves in new territory. Sarcoma-cells enter the blood very easily and metastasis may occur long before the primary tumor becomes fixed. For this reason it is not advisable to cut sections for diagnosis. The blood-vessel walls in the tumor are very thin, and when broken down the tumorcells enter the circulation readily.

The author urges the early removal of tumors which are at all suspicious. The final diagnosis is best made after removal. EDWARD L. CORNELL.

Loss, J. R., and Ebeling, A. H.: The Cultivation of Human Sarcomatous Tissue in Vitro. J. Exp. Med., 1914, xx, 140. By Surg., Gynec. & Obst.

The first attempt to cultivate human malignant tumor in vitro was made in 1911 by Carrel and Burrows. Small fragments of tumor were cultivated in normal human plasma and incubated. It was observed in some cases that after a few days the fragments were surrounded by many cells, but generally liquefaction of the medium occurred. The tissues were kept in a condition of survival for a few days, but no real cultures were obtained. Lately it has become possible to keep human foetal tissue, derived from fresh cadavers, in a condition of independent life for several generations, and the authors therefore attempted to cultivate human surcomatous tissue in the same manner.

Two experiments were made in which fragments from human sarcomatous tissue were cultivated. It was possible to keep cultures of such tissue in a condition of active life in vitro for several genera-

tions.

During the first 24 hours of incubation there was usually no evidence of cell coliferation, and only slight liquefaction around the primitive fragments. When no liquefaction occurred, growth of new cells manifested itself after 48 hours. Twenty-four hours after passage into fresh medium (first rassage). cell proliferation was observed in those curvers which showed no evidence of growth when fire cultivated. In comparison with human connective tissue, the rate of growth was practically the same as in the beginning, but a gradual decrease in the activity and extent of cell proliferation was observed as the length of time increased during which the culture was carried through successive passages. Microscopic examination of the first outgrowth of cells showed the presence of large round cells, as well as elongated and ramified ones. In subsequent passages the round cells were no longer to be identified, and the elongated, ramified variety only were observed.

The results obtained led Loss and Ebeling to conclude that it is possible to cultivate fragments of human sarcomatous tissue in vitro for several generations, and that the method employed may prove of value in the study of the growth of human malignant tumor.

George E. Beilby.

Davis, B. F.: Report of a Case of Sporotrichosis. Surg., Gynec. & Obst., 1914, xix, 490. By Surg., Gynec. & Obst.

The patient, a woman, 77 years of age, sustained an injury to the hand by a "hay needle" or "cactus

needle." following which a series of moderately indurated papules and papulopustules developed on the dorsum of the forearm, extending from the wrist to the region of the external epicondyle of the humerus. They increased in size very slowly, showed no tendency to heal, were almost painless, and were very slightly tender on pressure. Clinically the lesions were typical of sporotrichosis. The sporotrichium was cultivated in pure cultures from the lesions; comparative opsonic and ag-glutination tests demonstrated a high content of specific antibody in the patient's serum, in the serum of a second patient, and in the serum of animals immunized by the injection of killed sporothrix spores. Several different strains of sporotrichium were tested in this way and all served equally well as antigens; differentiation between them was impossible by the serologic tests. There was neither local nor general eosinophilia, contrary to the observations of a number of men who have suggested that eosinophilia might be of diagnostic importance

There being no acute lymphangitis, the larger lesions were excised and the patient placed on large doses of potassium iodide. Healing was uneventful, and when last seen, about six weeks after operation, the patient appeared to be making very satisfactory progress. In cases which prove refractory to iodides, copper sulphate in one-eighth to one-half grain doses in capsules, vaccination with heated sporothrix spores, and X-ray exposures may be of

benefit.

### McCarty, F. p.: Eruptions Following Operations. Surg., G.nec. & Obst., 1914, xix, 509.

By Surg., Gynec. & Obst.

cain eruptions were observed after operation in +3 out of 1,000 consecutive cases and were of two types, the first appearing within twenty-four or forty-eight hours after operation and the second appearing after a longer interval.

The earlier cases were characterized by a mild erythematous or papular eruption of general distribution, with no systemic disturbance and little elevation of temperature. Itching was marked from the beginning and the face was involved in every instance. In the other class of cases the eruption appeared suddenly three or more days after operation. During the interval there were no prodroma, but the temperature had continued higher than in normal convalescence and the blood showed a moderate leucocytosis. The condition varied from a localized to an almost continuous eruption and in some cases at first resembled scarlet fever or measles. It began as an erythematous or fine papular eruption located at first on the inner surfaces of the forearms and thighs and extending over the whole body, rarely affecting the face and never involving the palms and soles. It was accompanied by marked itching which persisted until fading occurred. The papules were at first pink and later dark red with a tendency toward coalescence over bony parts, and the eruption reached its height in twenty-four to thirty-six hours, after which it began to subside. The onset occurred as late as seven days after operation and the condition persisted for from one to seven days. quamation was not observed in any case.

The temperature showed an elevation of about one-half degree over that of a normal convalescence and this elevation continued until the eruption had disappeared. Daily leucocyte count showed an increase to 14,000 which was also maintained until

the eruption faded.

In all of the cases in this series ether was the anæsthetic employed, but cases have been previously reported where nitrous oxide and chloroform were used. Catharsis, enemata, or drugs seemed to have no influence and there was no definite relation to menstruation.

The condition seems to be due to a combination of factors, there being in each case an immediate cause, a certain individual idiosyncrasy, and an

underlying nervous susceptibility.

The immediate cause takes the form of mechanical irritation, such as operative shock, enemata, or drugs, and the underlying cause acts probably as a vasomotor disturbance due to irritation of sympathetic nerve-fibers.

## Engstad, J. E.: Psychic Shock Following Operations. J.-Lancel, 1914, xxxiv, 516. By Surg., Gynec. & Obst.

In a brief paper the author states that it is his belief that psychic and physical shock are correlated; that psychic shock may follow a very minor or major operation, be transitory in effect, or remain permanent and wreck the patient's life. He advocates Crile's anoci-association of mental and physical impressions at the time of the operation in order to prevent as much as possible any painful and depressing influences from reaching the mind of the patient. The operator should lose no time either in the preparation or during the operation. anæsthetic, preferably gas and oxygen, should be given in minimum quantities by a skilled anæsthetist. In order to miminize the number of cases suffering from surgical neurasthenia, the source of supply, which in his belief, augmented by a few quoted statistics, is due to a great many unnecessary operations being daily performed, should be limited.

EMIL C. ROBITSHEK.

#### SERA, VACCINES, AND FERMENTS

Schumkowa-Trubina: The Abderhalden Reaction in Carcinoma (Die Abderhaldensche Reaktion beim Carcinom). Deutsche Ztschr. f. Chir., 1914, cxxxi, 520. By Surg., Gynec. & Obst.

The author gives tables showing the results of a number of other authors in testing the Abderhalden reaction for the diagnosis of carcinoma, also the results of two series of cases of her own, one of 64 cases and the other of 155 cases, as well as some experimental work on white rats. She concludes that the protective ferments in the serum of cancer patients are not strongly specific; among 73 cancer cases examined with placenta 50 reacted positively; among 10 pregnant patients with cancer substrate

13 reacted positively.

The Abderhalden reaction is positive in about 95 per cent of cancer cases. The more homologous the tumor and the substrate are, the greater the number of positive cases; but there are as yet so many difficulties and sources of error in the reaction that it can hardly be recommended for daily use. Early diagnosis by means of the Abderhalden reaction does not as yet seem to be possible, but the question should be investigated further. A. Goss.

## Ball, C. F.: Abderhalden's Test in the Diagnosis of Cancer. J. Am. M. Ass., 1914, lxiii, 1169. By Surg., Gynec. & Obst.

The author states that some cases that are clinically not malignant give positive tests, especially myomata and pregnancy. This may be due to three causes:

I. Using cancer of the uterus as a substrate, normal uterine cells mixed with the cancer tissue may be digested by the ferments of the blood of myomatous or pregnant women.

2. A given individual may have had a clinically latent carcinoma and spontaneously recovered.

3. The developing carcinoma may be in such an early stage as to be clinically undemonstrable.

The author lays stress on the fact that a negative reaction is of more value than a positive one because of the many possibilities contributing to an erroneous positive finding. It is of especial value in differentiating gastric ulcer and gastric carcinoma. Stress is laid on the preparation of the substrate to be acted upon by the cancer serum. The tissue should be as fresh as possible with as little of the tissue that the carcinoma is invading as possible.

A description of the author's technique is given. It is comparable to the original Abderhalden technique with the exception of some minor details.

Of 12 known cancer cases all reacted positively; while of 46 unknown cases with a tumor of some organ present, 37 were positive and 9 negative. Of 24 known non-cancerous patients, 9 gave positive reactions. The author summarizes as follows:

1. Carefully prepared histories of all cases ex-

amined should be kept.

2. All cases should be followed up, especially cases that give a positive reaction, though not clinically malignant at the time of making the test.

3. Care in the selection of fundaments should be observed; a carefully prepared statement concerning their donor with a microscopic study of each should be kept.

4. Varied association of data pertaining to the patient and fundaments with reaction obtained is

essential.

5. Reëxaminations in determining the progress of the disease are of especial value.

6. The test cannot as yet be regarded as strictly specific for the diagnosis of cancer.

7. A positive reaction, however, should receive careful consideration before it is called erroneous.

F. H. Falls.

#### Vaughan, J. W.: Cancer Vaccine and Anticancer Globulins as Aids in the Surgical Treatment of Malignancy. J. Am. M. Ass., 1914, lxiii, 1258. By Surg., Gynec. & Obst.

The author gives a report of 100 cases treated with cancer vaccine and anticancer globulins. The globulins were obtained from the large mononuclear leucocytes in animals which had been sensitized to

cancer-cells.

Of the 100 cases, 50 were inoperable. Of these cases, 2 are apparently well and without recurrences, and 4 are markedly improved. The advanced cases in which operation was performed in combination with specific treatment were 31 in number; of these 23, or 73 per cent, are apparently well.

The study of the blood counts would indicate that cases in which the percentage of large mononuclear leucocytes increases from 10 to 20 per cent, following specific treatment, do well; while those that run a high polymorphonuclear count, and in which the percentage of large mononuclear cells is not materially increased, are not benefited.

The use of the vaccine is especially indicated as a preliminary measure to operation. The injection of the vaccine is followed within 24 hours by a marked increase in the large mononuclears. Operation is best performed at this time since these mononuclears are better able to destroy ells which may be left in the operative field or forced in the blood or lymph stream by operative manipulations.

The injection of globulins seems to produce marked improvement for the first three or four dose after which the ferment often loses its efficiency. The explanation of this phenomenon is the probable

formation of an anti-ferment.

It is the author's custom to give an intraperitoneal injection of vaccine 24 hours before operation. If the increase in large mononuclear leucocytes reaches from 15 to 25 immediately before operation, that is deemed sufficient. If this does not occur, then an intravenous injection of 100 mg. of globulins is given following the operation. In all of his cases alternate vaccine and globulin injections are frequently given for the first six months after operation and once a month thereafter.

J. H. Skiles.

## Fay, O. J.: Anaphylactic Reaction Following Operation for Echinococcic Cyst. Tr. West. Surg. Ass., Denver, 1914, Dec.

By Surg., Gynec. & Obst.

While hydatid intoxication has long been recognized as a possible sequence of exploratory puncture and therapeutic aspiration of echinococcic cysts, hydatid intoxication as a sequence of open operation has been accorded a place in medical literature only within the last few years. The

direct toxicity of hydatid fluid is slight, but sufficient fluid escapes through the cyst wall by dialysis and is absorbed to sensitize the organism which then responds to the absorption of even relatively small quantities of the fluid, such as may readily take place during an open operation, or varying degrees of anaphylactic shock.

Fay employs Dévé's classification of these symptoms and divides hydatid intoxications into three groups: (1) benign, (2) grave, and (3) fatal.

1. In benign intoxications, fever and urticaria are the most characteristic symptoms, while dyspnœa,

cyanosis, lesser nervous disturbances, and bronchitic phenomena are also common. The symptoms are not of a disquieting nature and are usually transient. 2. The second group is dominated by symptoms

of syncope and collapse, often accompanied or replaced by nervous manifestations of a more serious order. The symptoms of the first group may be present but are of secondary importance. The symptoms usually develop soon after operation and are of brief duration.

3. The fatal cases are usually ushered in by a sudden rise in temperature; serious respiratory difficulties and shock are of frequent occurrence. Nervous symptoms are often marked; urticaria is not reported. Death supervenes in from 24 to 48 hours and autopsy fails to reveal any gross

lesions.

The presence of eosinophilia and of a specific antibody, as shown by the fair percentage of uniform results obtained by the complement-fixation test, suggests that in the future it may be found possible to recognize a sensitized bearer of an echinococcic These patients would then require desensitizing treatment. Of what such treatment will comist is still a matter of conjecture but the results of animal and human experimentation seem to promise an anti-anaphylactic therapy for the near future.

#### BLOOD

Miller, S. R.: The Normal Differential Leucocyte Count. Bull. Johns Hopkins Hosp., 1914, XXV, By Surg., Gynec. & Obst.

The author was able to record the results obtained in making a large number of differential leucocyte counts upon medical students as a part of the routine work in the course in clinical microscopy at the Johns Hopkins Medical School.

From the analysis of his results he finds that-

I. The total leucocyte count and differential formula in normal individuals are subject to relatively wide variations, which must be considered in the interpretation of studies made upon the blood of individuals presumably suffering from abnormal conditions.

2. The interpretation of any differential count should be based upon: (a) A knowledge of that particular individual's normal blood picture, when possible. (b) The average values for the locality in which that individual resides. (c) A consideration

of those factors peculiar to the individual which might modify that particular blood.

3. Differential leucocyte counts should always be reported in terms both of percentage and absolute numbers per cubic millimeter, and in all cases, where possible, more than one differential count should be made, especially in borderline cases in which slight changes are to be regarded as of diag-

nostic or prognostic value.

4. The tendency to ascribe a diagnostic value to lymphocytosis is probably overdone. Only when the monunuclear elements constantly exceed the average percentage, absolute values, and upper limits of variation (35 to 40 per cent) for the community, and when all modifying factors are considered, should an attempt be made to draw valuable conclusions from the figures obtained.

GEORGE E. BEILBY.

#### BLOOD AND LYMPH VESSELS

Matas, R.: Testing the Efficiency of the Collateral Circulation as a Preliminary to the Occlusion of the Great Surgical Arteries. J. Am. M. Ass., 1914, lxiii, 1441. By Surg., Gynec. & Obst.

In an exhaustive article the author describes all the available methods for ascertaining the presence or absence of a collateral circulation. The aim in testing the collateral circulation is to avoid complicated and uncertain operations, whenever possible, by means that will furnish the information without trauma and that will permit of postponement of the operation in order that such prophylactic measures may be applied as will develop a sufficient collateral circulation. The following methods are enumerated:

- 1. The Quénu and Muret sign comprises the bleeding of the peripheral parts on puncture or incision while the main trunk of the limb is compressed. If no bleeding follows the compression of the main artery, it will indicate an insufficiency of the collaterals. This test is fallacious, inasmuch as the pedal pulses are often totally suppressed in aneurisms of the lower extremities and that scant if any hæmorrhage will occur from the peripheral vessels, and yet the nutrition and circulation of the foot are well preserved after the main channels have been blocked.
- 2. With Delbet's sign the formation of an aneurism or a tumor in the course of the main artery of a limb is often followed by the gradual or sudden obliteration of the peripheral pulses. When this occurs without apparently affecting the nutrition or vitality of the extremity, it may be concluded that the collateral circulation has been fully established and that the obliteration of the main trunk by operation can be undertaken with safety to the limb. (This sign is considered most valuable by Matas.)
- 3. The Henle-Coenen sign is applicable only in the field of operation when the injured artery is exposed above and below the lesion. If blood flows

from the peripheral opening in the aneurism while the proximal end is compressed with a clamp it is presumed that the collateral circulation is sufficient.

4. Von Frisch's three signs are applicable only in the field of operation. If the proximal side of an injured vessel is compressed, the efficiency of the collateral circulation may be demonstrated by:
(a) Normal or approximately normal coloration ("living color") of the periphery. (This sign was previously insisted on by Matas.) (b) Arterial hæmorrhage from the peripheral opening of the injured vessel. (Repetition of Henle-Coenen sign.)
(c) Venous stasis below the peripheral side of the clamped main vein. (von Frisch.)

5. Korotkow's test depends on tonometric and sphygmomanometric measurements of the blood-pressure in the peripheral parts. If the peripheral blood-pressure is more or less sustained after compression of the main trunk immediately above the aneurism, then the collateral circulation is adequate, and the artery or the aneurismal sac may be extir-

pated or obliterated.

6. The Pachon test is on the same lines as the Korotkow test and consists of an oscillometer, which depends on the record of the blood-pressure in the peripheral parts to determine the existence of the circulation in these parts after the temporary oc-

clusion of the main artery.

7. In the Tuffier and Hallion test a circular band is made to encircle the extremity. If the band is tightened, it will compress the veins, interfere with the return circulation, and cause a marked venous turgescence and swelling of the foot; but the arterial flow is not interfered with. If this maneuver is repeated with the main artery (femoral) compressed, the veins of the foot will swell, only on condition that sufficient arterial blood is brought to the foot by collaterals.

8. Stewart's calorimetric method of estimating the quantity of blood circulating through a part in a given period of time is especially applicable to the

extremities—the hands and feet.

9. The author's methods are: (a) Hyperæmia reaction, or living color test-suggested by Mosc-This test is reserved for the extremities wherever it is possible to compress the main artery. Complete ischæmia of the limb is obtained by elevation and application of an elastic bandage to the level of the lesion. Then a Matas compressor is applied, until the aneurism is absolutely stilled, and is allowed to remain from six to ten minutes. Immediately on removal of the elastic bandage, the compressor being still in place, a hyperæmic flush descends the limb rapidly. The digits retain a cadaveric, waxy, lifeless pallor for several seconds, which may be prolonged to ten to forty minutes or even longer, according to the development of the collaterals. (b) The second test is based on the preliminary occlusion of the main artery with the pliable and removable aluminum band.

The chief merits claimed for the author's tests are:

1. Simplicity and ease of application.

2. Reliability in furnishing fair and dependable information for clinical purposes.

3. That the test may be applied with a minimum of trauma to the blood-vessels and the affected parts.

LUCIAN H. LANDRY.

#### Halsted, W. S.: Partial Closure of Large Arteries (Der partielle Verschluss grosser Arterien). Arch. f. klin. Chir., 1914, cv, 580. By Surg., Gynec. & Obst.

Halsted has constructed a special instrument for rolling a strip of aluminum or silver around arteries. He has used the method for the treatment of aneurisms, both experimentally on dogs and clinically on human beings. He finds that some aneurisms can be cured by partial occlusion of the artery. The human aorta can be occluded without danger to such a degree that the femoral pulse is suppressed.

If the aortic aneurism is not cured by the first partial occlusion the artery can later be still further occluded, or possibly even ligated, after the heart has been prepared for it by the establishment of a satisfactory collateral circulation. The metal strip can be left around a normal aorta for several months or even a year, at least until good collateral circulation has been established. If the artery is diseased it may atrophy under the metal and become so thin that it ruptures on exertion. Such a case is described. The author thinks a metal band can be left permanently on any other artery than the aorta without danger of hæmorrhage.

Sometimes the lesser arteries are transformed into a fibrous cord. Halsted has observed this four times in the aorta of dogs. In all of these cases the artery was almost completely occluded. In all arteries, except possibly the aorta, the band may be drawn so tight that the pulse-not, however, the blood stream-is suppressed, if the condition of the heart is not such as to contra-indicate such a degree of occlusion. The danger of gangrene or functional disturbance is slight if the blood stream is not entirely cut off. In some cases of aortic aneurism it may be advisable to use fascia lata instead of metal; but the degree of compression cannot be determined as accurately or maintained as well as with the metal. Moreover, a great deal of practice is necessary to apply the fascia spirals, very little to apply the metal. A. Goss.

#### Warren, R.: The Application of Suturing to the Vascular System. Lancet, Lond., 1914, clxxxvii, 835. By Surg., Gynec. & Obst.

The subject is treated under three divisions: (1) wounds of the heart, (2) injuries to bloodvessels, and (3) aneurisms. In wounds of the heart that are repaired by suture, the author suggests that the use of vaselined sutures, as used by Carrel, might obviate possible thrombosis—a condition he had to contend with in his case.

The first case was a stab wound of the right ventricle, which was operated upon four hours after injury. The patient, 48 years old, when seen by the author was pale and anxious; feeble pulse of 120.

There was a small linear wound three-quarters of an inch long over the precordium. On opening the pericardium, a large amount of blood was found and a wound one and one-quarter inches long in the anterior surface of the right ventricle. The wound was effectually closed with five silk sutures. With the exception of a slight left pneumothorax and a femoral thrombosis, the patient made an uneventful recovery and was alive and active three years after

the injury.

The second was an excision of an injured portion of the femoral artery with end-to-end anastomosis. The patient, a 17-year-old boy, had been shot with a small caliber revolver at a range of 50 yards, the bullet entering at the apex of Scarpa's triangle. On exploration it was found that the femoral sheath had been pierced; the femoral artery was lead-stained on its outer surface and was slightly dilated and thinned at the point of impact. The injured half-inch of the femoral vessel was excised and the ends approximated and sutured by the Carrel technique. Although there was some narrowing at the site of suture, pulsation in the dorsalis pedis artery could be felt after the operation. The author admits, however, that this result could have been accomplished by collateral circulation after obliteration of the main vessel.

The third case, a punctured wound of the brachial artery, resulting in false aneurism, treated by suture, occurred in a lad of 15 years who had been stabbed in the inner side of the left arm. Six weeks after the injury a swelling developed in the region of the wound which eventually extended over the entire length of the inner side of the arm. No radial pulse could be detected; there was anæsthesia of part of the thumb and first three fingers, and weakness of the flexor muscles of the wrist and fingers. On exploration, a false aneurism was found communicating with the brachial artery through a slit about a half-inch in length. The median nerve was found to be flattened and thinned, but not divided. The operator had hoped to restore the lumen of the vessel by suture, but the vessel had become impervious below the site of injury. However, the aneurism was cured by the suture.

In speaking of the treatment of aneurisms, the author gives a short résumé of the methods in vogue. He distinctly favors that of Matas (endo-aneurismorrhaphy), of which Case 3 is an example of the restorative type.

LUCIAN H. LANDRY.

Leriche, R.: Stretching and Section of the Perivascular Nerves in Painful Symptom-Complices of Arterial Origin and in Trophic Disturbances (Über die Dehnung und Durchschneidung der perivaskularen Nerven bei manchen schmerzhaften Symptomenkomplexen arteriëllen Ursprungs und bei manchen trophischen Störungen). Deutsche Ztschr. f. Chir., 1914, cxxxii, 88.

By Surg., Gynec. & Obst.

The procedure suggested in the above title might seem paradoxical, as stretching of the solar plexus

has proved a failure in the gastric crises of tabes: but in tabes the peripheral sympathetic element is only a part of the general nervous disturbance. However, there are several purely sympathetic syndromes in which stretching of a periarterial plexus seems to be indicated. Among these is the intestinal symptom-complex caused by partial or partially compensated obliteration of the mesenteric arteries. The symptoms are crises of pain in the umbilical region, distention of the intestine, complete constipation, a feeling of oppression, and more or less intense dyspnœa. Its logical outcome is thrombosis of the mesenteric. It might be called "Raynaud's disease of the intestine." Stretching of the cœliac plexus and its peripheral branches is indicated.

The procedure promises still more in aortitis of the arch of the aorta, with its excruciating pain. The periarterial nerve plexus becomes embedded in tissue which has become hardened by inflammatory sclerosis. The aorta can be reached and the nerves stretched by resecting the second and third costal cartilages. By the same procedure applied to the arteries of the extremities good results have been obtained in Raynaud's disease and in congenital trophic cedema.

In one case of Raynaud's disease the author laid bare the femoral in Scarpa's triangle and the circumference of the limb decreased 2 cm. It is certain that exposing the femoral artery and stretching the periarticular nerves produces marked changes in vasomotor and trophic innervation. A proof of this is seen in the favorable effect of this simple operation in many stubborn cases of perforating ulcer of the foot.

A. Goss.

#### SURGICAL THERAPEUTICS

Dencks, G.: Clinical and Experimental Study of Hormonal and Neohormonal (Über Hormonal und Neohormonal, klinische und experimentelle Studien). Deutsche Ztschr. f. Chir., 1914, cxxxii, 37.

By Surg., Gynec. & Obst.

In 1908 Zuelzer, Dohrn, and Marxer reported a new medicament that they said acted as a specific in stimulating intestinal peristalsis. Such a remedy was very much needed in post-operative disturbances of intestinal function. They called their preparation hormonal, and recently an improved preparation, neohormonal, has been advanced. Its advantage over the older one is that it does not cause a fall in blood-pressure, and it can therefore be used in large doses without any danger.

Dencks tested these two preparations in 40 animal experiments and in about 140 clinical cases, and found that they really have a very powerful effect in stimulating intestinal peristalsis, whether given intravenously or intramuscularly. In favorable cases of chronic constipation they have an effect that persists for several years. They are more frequently successful in human cases than in animal experiments. The use of neohormonal is

therefore indicated in all cases of post-operative disturbance of peristalsis, as well as in all kinds of chronic constipation. In mild and moderate cases it should be given intramuscularly; 20 ccm. should be given first; if it is not effective in 6 to 12 hours the dose may be repeated, intravenously. In cases of severe paresis of the intestine where rapid action is desired it should be given intravenously; twenty ccm. should be given and repeated after 4 to 6 hours. In particularly severe cases 30 to 40 ccm. may be given at first and repeated after 6 to 12 hours. The neohormonal should be supplemented by enemas, heat, etc., and in the worst cases it may be combined with physostigmin or atropin. In chronic constipation 20 ccm. should be given intramuscularly, supplemented for the first two to four days by laxatives, such as castor oil, senna, cascara, etc. If it is not effective in that time, 20 to 40 ccm. more should be given, and in especially stubborn cases 80 ccm, or even more may be given. For children under 10 years of age half the above doses should be given. It can be given to infants of only a few months. If sufficiently large doses are given it seldom fails, either in postoperative cases or in chronic constipation.

A bibliography of 74 titles follows the article.

A. Goss.

#### MILITARY SURGERY

Kotschetoff, B. J.: Effect of Pointed Bullets, Based on Experience During the Balkan War (Über die Wirkung des Spitzgeschosses auf Grund von Beobachtungen während des Balkankrieges). Samml. d. Mitt. d. Årste d. Russ. Gesellsch. v. Roten Kreus, 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Among 929 wounded men, 576, or 62 per cent, were wounded by pointed bullets. These 576 patients had 629 wounds. The pointed bullet used by the Turks showed a great tendency to deformity, all degrees of which were observed, 35 per cent of the bullets extracted being deformed. In three cases the extracted bullets had their points directed outward, but only in one case could it be shown that the rotation took place inside the body. The bullets remained in the body in 10.9 per cent of the cases. In injuries of the soft parts only, the size of the entrance and exit wounds in 90 per cent of the cases varied from one-half of the diameter of the bullet to two and one-half to three times its diameter. The exit wound was generally larger than the entrance wound, but the opposite condition was sometimes observed. The wounds were generally round in shape, but sometimes cleft-shaped.

In some shots at close range — 6 per cent of the cases — the soft parts showed signs of an explosive effect. When bones also were injured the wounds were of the ordinary size in only 61 per cent of the cases; in 18 per cent both wounds were of large size, and in 21 per cent the exit wound was very large.

There were injuries to the bone in 24 per cent of the cases, 11 per cent of them puncture fractures, 54 fractures without marked comminution, 35 per cent comminuted fractures. Owing to the small external wounds, the course in the gunshot fractures was favorable. Of 19 gunshot injuries of joints, 15 recovered uneventfully; there was infection in 4.

Blood-vessel injuries by jacketed bullets were observed in 11 cases. In one case the apex of the bullet was in the wall of the posterior tibial artery, and when it was removed there was copious hæmorrhage. Skull injuries were observed in 10 cases; in 5 of them the bullets remained in the skull and 2 of these cases died. Of the cases in which there was perforation, 2 died. There were 7 cases of gunshot wounds of the abdomen — in 4 of these the bullet remained intact. One of the 7 patients died. There were 30 cases of gunshot injuries of the lungs, 3 of which died. In 11 cases the bullet remained in the wound.

In half of the cases there were complications, such as hæmothorax or inflammatory symptoms in the lungs. Of the 576 injuries by pointed bullets, 21.5 per cent were infected; but Kotschekoff thinks this percentage too high to be taken as valid for wounds in general, as his patients had been handled previously and the poor first aid and poor transportation were responsible for many of the infections.

HOLBECK

Makins, G. H.: A Note on the Wounds of the Present Campaign. Lancet, Lond., 1914, clxxxvii, 905. By Surg., Gynec. & Obst.

The relative frequency of wounds from bullets of small caliber and those inflicted by shrapnel or fragments of shells which were observed in the South African war has actually been reversed in the present European war. Moreover, of the limited number of bullet wounds a considerable portion have been inflicted by machine guns of the Maxim type and not by rifles. Wounds produced by the small caliber bullet maintain an aseptic condition if uncomplicated, while shrapnel and shell wounds without exception become infected and suppurate. The mere occurrence of suppuration in the case of even extensive wounds of the soft parts has led to less serious consequences than might have been expected; the sloughy surfaces rapidly clean up, especially under the influence of an iodine bath (3i. to the Oi.), and the patients, after a couple of days' rest in bed, show very little signs of constitutional infection. The wounds produced by the shrapnel balls vary in importance with the velocity retained at the moment of impact; some merely bruise, while others penetrate, and others produce injuries of the most severe "explosive type." The vast majority of the wounds heal nicely, and it is really remarkable how little the majority of the men are affected psychically by the grave conditions.

Suppuration and a variable amount of sloughing of the soft parts occur as a rule. After a few days the most striking feature is the rigid eversion of the skin margin of the wound, which persists for some time. In a certain proportion of cases the

result is more serious, especially in men who have lain out a long time and suffered during transport. A spreading gaseous cellulitis develops, which rapidly extends the entire length of the limb to the trunk. The tissues are often crepitant, and a dark reddish discoloration appears over the dependent parts. The resulting gangrene is difficult to treat by amputation, as the flaps rapidly assume the condition of the gangrenous part removed. Gangrene of this character is responsible for a very

considerable mortality.

A serious complication of wounds is the development of acute tetanus, running a very rapid course, but not marked by very severe spasms. This, as a rule, develops during the first week after the reception of the wound, but sometimes as late as the tenth or fifteenth day. The initial source of infection is to be traced to the soil, and there is no doubt that these complications are the direct result of difficulties of collection and transport of wounded attendant upon the military conditions under which fighting is now taking place. Many of the patients lie in the trenches until the darkness of night allows their removal; their clothes are infiltrated with mud, while the same shell which has caused the wound often brings down the side of the trench, and the injured limb may be covered with soil; again, the fragment of shell itself is commonly fouled with soil. DONALD C. BALFOUR.

Report of British Army Medical Service: Condition of the Wounded. Lancet, London, 1914, clxxxvii, 969. By Surg., Gynec. & Obst.

Judging by reports from the London base hospitals, the condition of the wounded British who have arrived there can be considered very satisfactory. Of those who came from the front after the battle of Mons and during the retreat the majority suffered from general exhaustion, want of rest, and footsoreness rather than from wounds; rest and care worked immediate restoration in the majority of cases. Of those who came after the battles of the Marne and the Aisne, nearly all were suffering from shell and bullet wounds, the number of the former greatly preponderating as is the case in the French hospitals. The striking point was the extraordinarily good condition in which the men arrived and the careful and cleanly nature of the dressings. Considerably less than 10 per cent of suppurating wounds were found, which is remarkable taken in connection with the comparatively large proportion of shrapnel injuries. Rapid healing has taken place in many cases and the men soon regained their general health. Every possible opportunity had been taken during their transportation to change the DONALD C. BALFOUR.

Stevenson, W. F.: The Use of "Dum-Dum" and Explosive Bullets in War. Brit. M. J., 1914, ii, 701. By Surg., Gynec. & Obst.

The author states that surgeons at the front, and especially young civilian surgeons inexperienced in

bullet wounds, are accusing their enemies of using "dum-dum" bullets. The "dum-dum" bullet is so named after the place near Calcutta, where it was first made. It is precisely like the Lee-Enfield bullet, except that the cupronickel envelope ends near the shoulder, about three-eighths inch from the point, leaving the leaden core exposed for that distance. Other forms of this class of missile have a hollow or dimple in the fore-end which is uncovered by envelope, or they have cross-cuts made with a saw in the direction of the long axis of the bullet; but in all of them the same object is desired—that they should readily break up on contact, or, at all events, on striking bone.

The mere fact of finding bullets broken into numerous fragments in wounds is no proof that this type of missile is being used by the enemy. The ordinary service bullet sometimes parts with its envelope, which may be torn into jagged and twisted strips of metal, while the leaden core is broken into sluglike pieces, with the result that the destructive effect on the soft parts of the limb is greatly increased. The only certain evidence of the employment of bullets of this type is the finding of them or fragments of them in the patients during their surgical treatment or in the positions recently

evacuated by the enemy.

The employment of explosive small-arm bullets in warfare comes under another category alto-

gether.

Army surgeons and civil surgeons employed on a campaign find a fairly large number of wounds the entrance apertures of which are clean-cut, circular holes of about the size of the end of an ordinary cedar-wood pencil, while the exit wounds are of great superficial area and accompanied by bone fractures of great severity and extensive comminution, together with widespread destruction of the soft parts. That injuries of this class could be due to the passage of a solid bullet of quite small caliber appears to those who see them for the first time to be impossible, and the ready explanation is immediately proclaimed that the enemy is using explosive bullets other than those for artillery guns; that is, he is using small-arm bullets containing bursting charges within them which explode on contact with the object hit. These cases have been met with, similar views have been held, and similar reports made regarding them since small-arms of the more powerful kinds were first employed in warfare-the Snider, Martini-Henry, Lee-Enfield, Mauser, Lebel, etc.—and practically in every war for the last fifty years each side has accused the other of using these explosive small-arm bullets; whereas, in fact, they have not been used at all.

Stevenson was present and had to report on a long series of experiments carried out at Woolwich when small-bore rifles (Lee-Metford and Lee-Enfield) were first adopted in the British army, for the purpose of ascertaining the probable effects of their projectiles on men in actual war. The results obtained in these experiments showed that

at short ranges the Lee-Enfield bullet produced wounds on the exit side, in a large number of cases, which, from their extent and extreme severity, it was difficult to recognize as being the results of solid bullets of 0.311-inch caliber; they looked as if they must have been produced by explosions within the tissues. It soon, however, became evident that two conditions as regards the bullet were invaribly present in these cases: (1) short range and therefore high velocity, and (2) that it had passed through structures offering great resistance to it; in these circumstances only was the explosive effect produced. M. S. HENDERSON.

Osler, W.: Bacilli and Bullets. Brit. M. J., 1914, ii, By Surg., Gynec. & Obst. 569.

Osler warns the soldiers against enemies subtle, dangerous, and fatal-enemies against which no successful battle can be fought without intelligent coöperation. So far the world has only seen one great war waged with the weapons of science against these foes. The Japanese went into the Russian campaign armed as fully against bacilli as against bullets, with the result that the percentage of deaths from disease was the lowest that has ever been attained in a great war.

Dysentery in camp can be prevented largely by boiling the drinking water. Pneumonia is to be guarded against by combating coughs and colds. Typhoid fever is the greatest danger and the author cites the American troops in the Spanish-American war, where one-fifth of the entire army had typhoid fever and 1,580 died. The danger is chiefly from persons who have already had the disease, and who carry the germs in their intestines, harmless messmates there, but capable of infecting barracks or camps. It can readily be understood how flies lighting on the discharges of such typhoid carriers could convey the germs far and wide. It was in this way probably, and by dust, that the bacilli were so fatal in South Africa. When it is considered that there were 57,684 cases of typhoid fever, of which 19,454 were invalided and 8,022 died, it will be seen that more died from this disease than from the bullets of the Boers. It is hoped that this terrible record will impress upon soldiers the importance of carrying out with religious care the sanitary regulations.

Osler strongly favors vaccination against typhoid. stating that of 90,646 regulars in the U.S. army in 1913, there were only 3 cases of typhoid, due to this vaccination. Previous to this, there had been 3.53 per thousand. M. S. HENDERSON.

Herman-Johnson, F.: A Simple and Rapid Method of Localizing Bullets. Brit. M. J., 1914, ii, 752. By Surg., Gynec. & Obst.

The limb is placed on the table with the X-ray tube below, and the general position of the bullet is ascertained by the fluorescent screen. A small metal ring is then manipulated until it encloses the image of the bullet. This place is then marked with silver nitrate on the skin. The limb is then rotated 90° and the same procedure is again carried out. Lines from these two points drawn perpendicular to the surface of the limb will meet at or in the close vicinity of the bullet. J. H. SKILES.

Perthes, G.: Indirect Gunshot Fractures; Distant Effects of Infantry Bullets on Nerve Tissue (Über indirekte Schussfrakturen nebst einer Bemerkung über Fernwikungen des Infanteriegeschosses auf das Nervengewebe). Deutsche Zischr. f. Chir., 1914, cxxxii, 191. By Surg., Gynec. & Obst. Chir., 1914, cxxxii, 191.

In 1901 the author described a fracture of the tibia which occurred during the Pekin expedition, where the bullet did not strike the bone directly, the fracture being considerably below the track of the bullet. He has never found any similar reports in the literature, but has observed two apparently similar cases in the present war. He therefore shot some dead horses with dum-dum bullets to see whether he could produce such fractures indirectly, and succeeded in breaking the powerful femur of a horse without striking it with the bullet.

He also describes the case of a soldier who was struck by a pointed French bullet. The bullet struck the deltoid and rotated, so that its apex pointed outward. The brachial plexus was not struck, but a severe motor, and less severe sensory, paralysis developed. No anatomical lesion could be found on laying bare the nerves. Similar distant effects are observed in the brain. Bullets may fracture the skull without injuring the dura, and yet circumscribed cortical paralysis will develop.

A. Goss.

## GYNECOLOGY

#### **UTERUS**

Schumann, E. A.: Tracheloplasty, a New Operation for the Relief of Sterility Due to Stenosis of the Cervix Uteri. Am. J. Obst., N. Y., 1914, lxx, 604. By Surg., Gynec. & Obst.

In order to insure permanent widening of the cervical canal, Schumann recommends the following operation which he has successfully performed: dilatation of the cervix with Goodell dilator to fully one and one-half inches; removal of a strip of tissue, one centimeter wide, from the posterior wall of the cervical canal extending from the internal to the external os, and this strip extends through the entire thickness of the mucosa down to the muscularis. A strip of mucosa corresponding in size is then cut from the middle of the posterior vaginal wall, the top of the strip ending at the summit of the posterior vaginal fornix, the base of the strip being left attached. The resultant raw area is closed with catgut, and the strip is then carried into the cervical canal, fitted to the space prepared as described, and stiched in place with catgut, the undetached base of the vaginal flap furnishing it nutrition. Five to seven days later the pedicle is severed. The end-result is a cervical canal having in its posterior wall a gutter of mucosa covered with flat squamous epithelium, which permits the free ingress of spermatazoa no matter how great the degree of cervical spasm or stenosis may be.

N. SPROAT HEANEY.

Waldo, R.: Amputation of Cervix for Bilateral Laceration and Cystic Degeneration; Sterility Due to Anteflexion of the Uterus. Internat. J. By Surg., Gynec. & Obst. Surg., 1914, xxvii, 349.

Waldo calls attention to the efficacy of amputation of the cervix according to the method advised by Marion Sims. This operation, he maintains, is indicated in women over 40 years of age because trachelorrhaphy at that age is seldom, if ever, satis-

In performing amputation of the cervix it is important to leave the external os considerably larger than normal, because as involution takes place the cervix contracts and there is danger of stenosis. The author has seen and reoperated upon several cases in which stenosis had occurred follow-

ing amputation of the cervix.

Subsequent pregnancies do not relacerate such a cervix, provided the cervical canal is not constricted too much at the time of operation. Likewise, a perineum that has been properly repaired will stand the strain of delivery quite as well as, or better than, the perineum of an ordinary primipara.

The post-operative treatment in these cases is

very simple. Catheterization of the bladder may be required. Besides the usual aseptic precautions of catheterization, the author recommends a 20 per cent solution of argyrol for use as a lubricant for the catheter, which reduces the chances of infecting the bladder very materially. The external genitals are flushed off with 1:5000 bichloride solution after micturition or defecation. At the end of a week a warm-not hot-vaginal douche is given every day. Sterile water may be used instead of the bichloride solution.

The author reports the case of a young woman, 22 years of age, who had been married two years and was very desirous of having children. The husband was potent, as shown by a microscopical examination of his semen. Vaginal examination of this woman showed marked anteflexion of the uterus without complications. The operation of choice in this type of case is the Dudley operation. This procedure, Waldo believes, gives the best drainage of the uterus and the most direct cervical canal. more certainly obtain an open straight canal, the cervix should be very thoroughly dilated before this operation is performed. After this operation the patients seldom remain in bed over a week, and many of them may leave earlier.

HARVEY B. MATTHEWS.

Gibson, G.: Uterine Cancer; Experience with It at St. Peter's Hospital. Long Island M. J., 1914, viii, 374. By Surg., Gynec. & Obst.

The author divides uterine cancer into two clinical groups which bear no relationship to each other, as the course and behavior of cervical cancer is markedly different from that of cancer of the body of the uterus.

At St. Peter's Hospital vaginal hysterectomy by the combined clamp and ligature method was used in cases in which the mobility of the uterus was not markedly interfered with by parametric infiltration. Cautery operations were performed on cases in which the extension was too marked to justify the hope of radical cure.

From 1895 to 1914, 140 cases were admitted to the gynecological division. Of this series 55, 39 per cent, were beyond even palliative measures; 29, 20 per cent, had cautery operations; 56, 41 per cent, had hysterectomies-53 vaginal and 3 abdominal. There was a primary mortality of 12 per cent.

Only the cases in which hysterectomy was performed were investigated; of these 5 were readmitted for recurrence within five years after operation. The author was able to trace 17 cases: 2 of cancer of the body and 15 of cervical cancer. Both cases of corporeal cancer were operated on over five years

ago and both are alive and well.

Of the 15 cases of cervical cancer, 8 were operated on over five years ago and 7 within five years. Of the 8 cases operated on over five years ago, 3 did not live five years, I lived fourteen, I lived ten years, and 3 are alive and well. Of the 7 cases operated on within five years, I died of cancer thirteen months after operation and I has a recurrence at present. Five cases are well four years after operation and one two years after operation.

The author concludes that no better example could be had of the need of educating the public and the profession regarding malignant disease of the uterus, and points to the fact that one should not wait for atypical bleeding but should investigate the cause of leucorrhœal discharge. The "family physician" is too prone to put it aside, saying that

leucorrhœa is caused by "female weakness."

Seuffert, E. von: Present Status, Problems, and Limitations of Radiant Treatment of Cancer (Heutiger Stand, Probleme, und Grenzen der Strahlenbehandlung der Krebses). Strahlentherap.,

1914, iv, 740. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The success attained thus far in the treatment of uterine cancer by ray treatment is far in excess of the results secured by any other method. Only when metastases are already present is the prognosis as bad as with other methods of treatment. The enormous advance recently made in radiant treatment is due to the fact that sufficient quantities of isolated rays can be used, partly through improvements in technique, partly through the fact that more abundant sources of radiant energy are available; and this fact makes it possible to destroy carcinoma cells electively, even in the deeper tissues. The removal of toxic rays by filtration is one of the greatest advances in deep irradiation.

The extension of the limits of erythema, the result of the most recent advances in technique, which makes a greater hardness of rays possible, is a decided advance in carcinoma treatment. The biological effect of the rays on the skin, however, is not entirely in proportion to their hardness, but may be very different with different apparatus, and must be determined by experiment. The amount of the minimum dose for therapeutic effect must be determined by the sensitiveness of the tissues to be treated, and this varies greatly. Danger to the skin in many cases prevents percutaneous deep irradiation. Great caution should be exercised especially in constitutional diseases, in acquired local hyper-sensitiveness, because of the danger of late injury which may occur on repeated irradiation of spots that have formerly been exposed to röntgen rays. Care is necessary also in the radiant treatment of very young individuals. The younger the cell the greater is its sensitiveness. This seems to be true of tumors also. The greater their energy in growth, the greater their sensitiveness to röntgen and similar

rays seems to be. The effect of the more or less elective radiant treatment lies in the rays themselves, not, as might be assumed, in substances produced in the body by the rays. The deep effect is produced by sufficient quantities of hard penetrating röntgen rays or  $\gamma$ -rays. The soft röntgen or  $\alpha$ and  $\beta$ -rays have not the specific elective effect of the hard rays, but they seem to exercise a more uniform corrosive effect on all the tissues. There still is some doubt as to whether the biological effect is produced by the primary hard röntgen or y-rays, or by their secondary rays. Still more doubtful is the value of the attempts at sensitizing to produce secondary rays, or the injection of borcholin to supplement the destruction of carcinoma cells.

Deep irradiation has its limitations, (1) because the intensity of the rays decreases as the square of the distance, and (2) because the original strength of the rays at the surface of the body is weakened by absorption. The results of deep treatment can be improved (1) by increasing the distance of the source of the rays and increasing their intensity, and (2) by

hardening the rays.

The danger of stimulating the carcinoma cells must be avoided. It is not vet definitely decided whether radium and mesothorium treatment should be given the preference to röntgen rays, and if so to what extent. The author weighs the advantages and disadvantages of each and comes to the conclusion that at present in the treatment of carcinoma of the uterus, röntgen rays, radium, and mesothorium are all about of equal value. As for the treatment of other carcinomata, there seem to be cases in which percutaneous irradiation is indicated: and in these, röntgen rays are to be given the preference, for the necessary amounts of radio-active substances for a treatment without danger are at present unattainable.

The dangers of irradiation and the possibility of avoiding them are discussed, and in conclusion the results of ray treatment at Döderlein's clinic are given. Fifty-four women with carcinoma of the uterus have been treated and their treatment can now be regarded as successfully completed. Among them there were 19 inoperable cases; today the patients are well and are working just as they did before the disease began. OEHLER.

Percy, J. F.: The Treatment of Inoperable Carcinoma of the Uterus by Application of Heat.

Surg., Gynec. & Obst., 1914, xix, 452.

By Surg., Gynec. & Obst.

In discussing inoperable carcinoma, Percy refers to a previous paper in which the results of experimental work, detailing the extent of penetration of heat into tissues from the head of an electric heating iron heated to various temperatures, were given.

These experiments give conclusive evidence that with the cautery at a low temperature, the "cold cautery," a much more extended penetration of heat of a degree destructive to the carcinoma cell is obtained. On the other hand, if a high degree of

heat is used, i.e., with the cautery heated to a bright cherry red, all the tissues are not only burned up, but the carbon core which quickly forms inhibits the further dissemination of a sufficient degree of heat to treat successfully any considerable area of malignant growth. This carbon core also tends to prevent drainage, which is an important factor, particularly in those cases where a large mass has been treated.

The author refers to the original and almost startling observation of Vidal, that the various toxins, vaccines, and serums which have come out of the experimental laboratory are effective only when they cause temperature reactions after injection into the

cancer.

Reference is also made to the experimental work that has been done in various laboratories both in Europe and America, showing the inhibiting and destructive effect of definite degrees of heat when applied to mouse carcinoma for various periods of time. The carcinoma cell is destroyed when the temperature is raised to 44°C. (111.2°F.) for half an hour, while the normal tissue-cells are not harmed until the temperature reaches 55° to 60°C. (131° to

140°F.).

Emphasis is laid on the fact that the basis of the author's technique for treating uterine carcinoma is not a burning up or cauterization of the pathology, as has heretofore been practiced, but merely the application and dissemination of a degree of heat sufficient to inhibit the further development of the cancer-cells. When this is accomplished, the small outlying isolated foci that may remain after the destruction of the original focus can be treated by any of the methods that experience has shown to be of value.

The author mentions further improvements to be made in his technique which will widen its application and effectiveness in the treatment of cavity carcinoma, but he does not minimize the good results already obtained by his present method of procedure.

Childe, C. P.: Abdominal Panhysterectomy for Carcinoma of the Cervix Uteri. Brit. J. Surg., 1914, ii, 119. By Surg., Gynec. & Obst.

The author advocates a two-stage operation. He insists on a preliminary examination under anæsthesia to make a thorough examination of the cervix itself; to ascertain the mobility of the uterus, the extent of infiltration along the parametrium, the implication of the bladder or rectum, and whether or not an operation is advisable. The case may be inoperable, suitable for operation, or doubtful, warranting an exploratory laparotomy later. A portion of the growth is removed for microscopical examination and all the growth accessible is curetted away and the raw base or cavity of the ulcer is gone over with Paquelin's cautery. In the interval preceding the major operation the patient is given vaginal douches of 1:5000 biniodide of mercury twice daily.

The second operation consists of a vaginal and an abdominal stage. The patient is first put in the lithotomy position and the base of the ulcer is again curetted and cauterized. The vagina is then dried and painted with iodine and the ulcer and vagina packed closely with a sterile swab, the end of which is left hanging out. The swab is withdrawn just before the vaginal clamp is applied.

The abdominal stage is on Wertheim's lines up to a certain point; i.e., the ovarian vessels are tied, the round ligament is crushed, the ureters are isolated, and the uterine arteries are ligated. The remainder is on different lines. The author has specially constructed broad crushing clamps which are placed on the parametrium close to the pelvic wall, the point reaching to the side wall of the vagina—care, being taken that the ureters are clear, and that a portion of the iliopelvic colon is not included on the left side. The parametrium is then cut close to the clamps, which are left on. The vaginal clamp, which is constructed on similar lines, is applied to the vagina, which is cut across and the uterus removed. Paquelin's cautery is applied to the cut edges of the parametrium and vagina and the clamps released and removed. The peritoneum is sewed over and the abdomen closed.

The operative mortality in the author's case was 1 in 18 cases, or 5.5 per cent. In no case was there any symptom of post-operative hæmorrhage. He believes that the clamp method not only saves time, but that it is safer than ligation. C. H. Davis.

Hamilton, J. A. G.: Dysmenorrhœa. Med. J. Austral., 1914, xvii, 395. By Surg., Gynec. & Obst.

The author notes that painful menstruation in young girls, especially among the leisure classes and the shop and factory girls, is decidedly on the increase, while dysmenorrhoea is comparatively rare among farmers' daughters and those who are either able or willing to lead a healthy outdoor life. The question is whether or not young girls are overeducated to the extent that their general health is interfered with. An improper mode of life, irregular hours for rest and eating, insufficient exercise, lack of fresh air and sun, resulting in a poor development, predispose the woman to a variety of pathological conditions, and as the reproduction apparatus is more delicately organized, it suffers the most.

The author discusses dysmenorrhæa under two

headings:

1. Dysmenorrhœa due to congenital defects.

2. Dysmenorrhœa due to acquired lesions of the

uterus, tubes, ovaries, or other organs.

In the first class the uterine dysmenorrhoea is associated with defective development; the uterus after puberty in such cases continues in a more or less infantile condition. The malformation affects the cervical canal to a certain extent, causing it to be either sharply kinked or the seat of pronounced stenosis. The pain is due to the irritation from congestion; the abnormal vascular tension irritates the nerves of the uterus.

In the treatment of dysmenorrhœa, it is very important to remember that it is often a local manifestation of a general condition. A change in habits and of location will improve the general condition as well as the dysmenorrhæa. The mechanical treatment calls for dilatation. It is the author's practice to do this under an anæsthetic and, after dilating as far as possible with Hegar's dilators, the cervix is packed with a strip of gauze. This has a softening effect and in twenty-four hours the cervix is found well dilated. The uterus is then curetted and swabbed out with tincture of iodine. The entire uterus is packed with iodoform gauze, which is left in for three days. This straightens out the cervix and causes the uterus to contract, thus stimulating development. In selected cases good results are obtained by the use of a stem pessary. The pessary is left in for eight or ten days and the patient is kept in bed. The pessary is always removed during a menstrual period; if necessary, it may be reinserted after two or three months. Simpson's incision of the cervix should not be used, as the scar may result in malignant disease in later life.

In acquired dysmenorrhæa, the complicating lesions should be treated first. Hamilton calls attention to the long appendix which hangs down into the pelvis, taking part in the pelvic congestion which accompanies normal menstruation. The congestion of the appendix is increased at each period and eventually becomes permanent. Severe pain results, which resembles interuterine dysmenorrhœa. The removal of the appendix cures the condition. The essence of dysmenorrhœa seems to be congestion. EDWARD L. CORNELL.

Coe, H. C.: Metrorrhagia at Puberty. N. Y. St. J. Med., 1914, xiv, 432. By Surg., Gynec. & Obst.

Coe calls attention to the fact that menorrhagia and metrorrhagia at puberty are conditions that have attracted very little serious scientific attention in America. He deplores this fact and hopes his brief paper will awaken a more general interest in the subject.

There are certain cases with obvious etiologic factors such as ovarian cysts, displacements, etc., but it is those cases in which careful search reveals no local or general cause that should be studied

more thoroughly.

He mentions the opinions of several foreign writers in this field but thinks some of them smack more of the study than of the post-mortem table or laboratory. It seems to him that too little attention has been paid to the well-known intense pelvic congestion accompanying early menstruation in perfectly healthy subjects. This condition frequently becomes pathologic in degree, through some impalpable or unnoted cause, in children who develop rapidly and beyond their years.

Recent works of Goffe and Sturmdorf are particularly illuminating in any consideration of this subject, and the author recommends their perusal.

While the author is far from viewing such cases purely from a gynecological standpoint and urging early resort to the physical examination of young girls, he does insist that while amenorrhœa at puberty and for two or three years afterward may be treated expectantly, persistent metrorrhagia is an indication for careful recto-abdominal palpation; this is best done under an anæsthetic, when curettement or laparatomy, if necessary, may be done.

Often the family physician holds a grave responsibility in these cases. He may do much to regulate wisely the entire life of the young girl; but if the case develops serious hæmorrhage, no prudishness or nervousness of mother or daughter

should alter his judgment.

Hydrastin, stypticin, styptol (gr. ii+.i.d.), strychnine, and alum douches have helped many cases.

E. A. BULLARD.

Buck, M. J.: Inversion of the Uterus. Surg., Gynec. & Obst., 1914, xix, 487.

By Surg., Gynec. & Obst.

The author describes two cases showing the success of an operation similar to that of Kehrer. The uterus was grasped by three tenacula, one on either side of the median line of the cervix and one in the fundus, which acted as guys to steady or change the position of the uterus. An incision was made beginning at the vault of the vagina anteriorly extending through the cervix body and fundus of the uterus splitting the uterus anteriorly; then the position of the organ is changed from a forced postflexion to an extended antiflexion by pulling it up by the fundus and down and back by the cervix, then crossing the cervical tenacula, thereby aiding in turning over the uterus upon itself, as one would the finger of a glove aided by pressure and counter-pressure.

The sutures were inserted one-fourth inch from the margin of the incision and emerged short of the mucous lining and were then crossed over to the opposite side and brought out on the surface, requiring in all 12 sutures, 8 deep and 4 superficial. The apposition of the lips of the incision was materially aided by the tension on the crossed tenacula, the right pulling to the left and vice versa.

There has been considerable difficulty encountered in getting close approximation of the incision, owing to the tension from the resistant uterine tissue requiring an excision of a wedge-shaped piece of the uterus. Although this has not been the author's experience he is inclined to the opinion that the difficulty in approximation of the edges is due to taking too deep a bite with the needle in inserting the suture, three-fourths of the thickness of the wall being sufficient. When he inserted the sutures through the entire thickness of the uterus the approximation was not good and the sutures had to be removed and reinserted; and, this, aided by the crossed tenacula, kept the margins tense until the suture knots were properly tied, completing a very satisfactory adjustment.

If the surface and the near surface of the incision are properly approximated one need have no concern about the deeper layers, as the elasticity of the tissues will be sufficient to keep them in apposition for good union.

No difficulty was experienced in returning the uterus to the peritoneal cavity. The operation while requiring some dexterity is not to be classed

in the major column; it requires less than half an

hour to complete.

The shock would be of little moment if it were not for the fact that the patient is usually brought to the surgeon in a very anæmic condition.

Leclercq, J., and Crépin: Mechanism of Gangrenous Perforation of the Uterus; Note on the Arterial Circulation of the Uterus (A propos du mécanisme de la perforation gangréneuse de l'utérus; note sur la circulation artérielle de l'utérus). Bull. Soc. de méd. lég. de France, 1914, xlvi, 150.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In gangrenous perforation of the uterus, the perforation opening forms the frustum of a cone with the smaller surface directed toward the cavity of the uterus. To explain this the authors studied the circulation of the blood in the uterus, and found in the injected uterus, which they cut through the fundus a few millimeters above the cavity in a transverse direction, that the branches of the two uterine arteries formed extensive anastomoses with each other. But in the fundus the fundal branch of the uterine on each side formed terminal arteries in certain directions that did not anastomose freely with those of the other side. These findings, which were confirmed by radiographs of injected specimens, explain the clinical phenomenon. Frankenstein.

Nicholson, W. R.: A Case Report Illustrating Certain Dangers in the Use of the Intra-Uterine Stem. Am. J. Obst., N. Y., 1914, lxx, 608. By Surg., Gynec. & Obst.

Nicholson calls attention to the fact that the intra-uterine stem is not without danger from the standpoint of serious resulting infection even in properly selected and previously non-infected cases, and gives the report of such a result in one of his own cases. All possibility of latent infection having been excluded by thorough preliminary examination, the usual aseptic operative technique was employed. A satisfactory afebrile course was pursued during the two weeks the patient was in the hospital. One week later there were typical symptoms and finding of acute bilaterally infected appendages, which subsequently necessitated an abdominal section and removal of the adnexæ, portions of one ovary and of one tube being left. The tissues contained no pus, but the tubes were distorted and bound down and the ostia were closed; the right ovary was enlarged to the size of an orange by cystic degeneration containing a bloody fluid. Preceding the attack the patient had several non-sterile douches, and had had intercourse; examination of the husband proved him to be free from disease. N. SPROAT HEANEY.

Gallant, H. E.: Continuous Uterine Drainage.
N. Y. M. J., 1914, c, 702.

By Surg., Gynec. & Obst.

In 250 cases relief from the subjective and objective symptoms of cervical obstruction from various causes was secured by means of silver and fenestrated rubber drains.

The drains were inserted into the cervical canal and drainage promoted continuously for six or more months. The only unfavorable results were menorrhagia and metrorrhagia in some few cases.

The conclusions are as follows:

1. Normally the menstrual blood condenses in the passive uterus, escapes drop by drop or trickles from the os externum in a bright red, intermittent stream, without malaise, pain, headache, or any sort of reflex manifestation.

2. Obstruction to the free outflow may be caused by fibrosis, cicatrization, flexure, neoplasm of any portion of the cervical canal or of the lower uterine

zone

3. Obstruction is primarily an intermenstrual condition which causes retention of mucus, etc., within the uterus, retards the outflow of menstrual blood, and shuts in the dangerous remnants after abortion, miscarriage, and labor, and gonorrheea.

4. Obstruction excites the uterus to labor-like activity, brings about hypertrophy of its wall, enlargement of its cavity, increased weight, and an abnormal condition of its mucous membrane.

- 5. Obstruction during menstruation causes colicky cramps, labor-like pains, backache, headache, and other reflex pains; obstruction during labor causes serious dystocia; obstruction after labor induces after-pains, facilitates infection, and favors subinvolution; obstruction between periods—intermenstrual—forces infection into the tubes and peritoneum, and results in peritonitis, tubal gestation, hydrosalpingitis, and pyosalpingitis, and, by thus obstructing the tubes, is the most common cause of sterility, and frequently is the cause of marital infelicity, leading to the divorce courts and the hospital; and if the woman escapes with her life, she will be compelled to live an aphoric life, subsisting on the alimony which the courts offer as her only redress.
- 6. Obstruction in young or older women can be and should be remedied, by dilatation, drainage, replacement, pessary support, or suspension of the

uterus.

7. Continuous efficient drainage can be secured only by the use of a drain which will permit the cervical mucus to pour into the drain, mingle with the secretions, and prevent clogging and plugging.

- 8. To prevent recontracture of the internal os, reflexure of the anteflexion, the drain must be of rubber, fenestrated or perforated, sutured in the cervix, and must remain *in situ* for six or more months.
- 9. Experience teaches that except for the removal of detached secundines or placenta, curettage is unwise and can therefore be dispensed with.

10. To secure uninterrupted drainage from the uterine cavity in acute cases a gauze roll wick should be placed in the vagina, with its upper end under the drain and the lower end projecting through the vulva so as to come in actual contact with the vulva pad; otherwise pus will collect in the vagina and sapræmia will result. D. H. BOYD.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Benthin, W.: The Ovary and Internal Secretion (Ovarium und innere Sekretion). Therap. d. Gegenw. Berl., 1914, lv, 193

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Through its internal secretion, the ovary influences the development and maintenance of the sexual system. It sends hormones to the uterus which prepare the mucosa for the reception of the ovum. These hormones cause the lack of coagulability of the menstrual blood. The formation of myomata is related to the function of the ovary, and osteomalacia is chiefly caused by changes in the ovary, as is shown by the results of castration in 87 to 93 per cent of the cases. Chlorosis is also dependent on ovarian activity.

Aside from its influence on the genital tract, the ovary exercises stimulating or inhibitory effects on metabolism and growth. In some conditions there is a disturbance in balance between the ovarian secretion and that of other glands of internal secretion, as of the thyroid in Basedow's disease and of the hypophysis in adiposity. The chief source of the internal secretion is the corpus luteum; it is questionable whether the interstitial tissues-theca lutein cells—have a vicarious or regulating action, as might be suspected from the abundance of this tissue in animals that do not menstruate regularly. Results of organotherapy with ovarian preparations support these views. H. Scholz.

Vignes, H.: Influence of Lecithin and Cholesterin on the Toxicity of Ova and Ovaries (Influence de la lécithine et de la cholestérine sur la toxicité des œufs et des ovaires). Ann. de l'inst. Pasteur, 1914, xxviii, 437

By Zentralbl. f. d ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Aqueous extract of herrings' eggs heated to boiling temperature and, still more, the extract not heated, showed a toxic effect on rabbits, as did extract of pigs' ovaries. The toxic effect was mani-fested by loss of weight, sometimes progressing to cachexia and death. Lecithin, and, to a lesser extent, cholesterin, overcame this toxic effect totally or in part; lipoids extracted from the ovary had a toxic effect and caused loss of weight in guinea pigs after a single injection. E. NEUBAUER.

Hibbitt, C. W.: Conservative Surgery of the Ovary. Kentucky M. J., 1914, xii, 615.

By Surg., Gynec. & Obst.

Success in the practice of conservative surgery of the ovary comes by studying the pathological condition when the abdomen is opened, by possessing a thorough knowledge of the limitations for successful conservatism, and in being able to follow the future histories of the cases. The principal rules which are necessary for success are:

 Good surgical judgment.

2. Always leaving an adequate blood supply for the ovary.

3. Supporting the ovary in as near its normal

position as possible.

In exercising surgical judgment, the first point of importance is adhesions. Adhesions must be dissected or peeled off, leaving the surface of the ovary free and as clean as possible from all inflammatory tissue; but if the ovarian tissue is torn, it should either be resected or removed entirely. If any inflammatory tissue is left on the ovary, it will favor adhesions again and thus defeat good results.

Small cysts if few in number can be punctured and the fluid allowed to escape. Resection is indicated where a single retention cyst is present, but in a cystic degeneration, where the whole ovary is involved, removal and not resection should be done.

Resection should be adopted also in hæmatoma. In performing the resection, a knife is far more preferable than scissors, as the latter tend to squeeze or pinch the ovary unless they are very sharp. All the diseased structure should be cut away, and with very fine catgut and a small needle the raw areas should be brought together by a continuous stitch. as this controls the bleeding more satisfactorily than a few interrupted sutures, for with continued oozing a hæmatocele and infection and adhesions may result.

The suspending of the ovary is a simple but important matter; it probably keeps it out of its old bed of adhesions. A small needle with silk or catgut is passed through the external end of the ovary and then through the posterior surface of the broad

ligament near its upper part.

Maintaining a normal blood supply to the ovarian tissue left is of the utmost importance. Neglect in this respect is the cause of many failures following conservative work, and ædema and cystic degeneration develop. The blood supply of the ovary is easily interfered with unless care is taken in placing ligatures in all operations where the ovary is to be left. In salpingectomy—cutting the tube from the mesosalpinx—care should be used to incise the mesosalpinx through its extreme upper border. This will leave the blood supply of the ovary normal and the mesosalpinx will be satisfactory for ovarian suspension.

All rough handling and traumatism of the ovary during the operation should be avoided, and absolute asepsis and hæmostasis should be secured to make the work a success. EDWARD L. CORNELL.

Gordon, A.: Nervous and Mental Disturbances Following Castration in Women. J. Am. M. By Surg., Gynec. & Obst. Ass., 1914, lxiii, 1345.

The author observed a series of 112 cases, in the majority of which the ovaries alone were removed; the others had both ovaries and uteri removed. In 37 cases oöphorectomies were performed through errors in diagnosis. An analysis of his cases permitted him to reach the following conclusions:

Removal of the reproductive organs in women causes disturbances in the domain of the nervous system. These disturbances were of a purely functional nature. They were somatic and psychic.

The psychic manifestations, while individually they belonged to any of the varieties of psychoneuroses, nevertheless in their ensemble did not constitute any of the well-established forms of psychasthenia.

True insanities were not observed.

The generally observed symptoms were: restlessness with a tendency to move from place to place, difficulty of control, dissatisfaction with everything and everybody, discontent, want of interest in all absorbing subjects and objects, indifference, indolence, and pessimism. Sometimes there were outbreaks of anger with a tendency to attack others. Among other symptoms might be mentioned: insomnia, gastro-intestinal disturbances of a functional nature, headache, vague pains or paresthesias, also occasionally glycosuria; tendency to obesity was also observed in some patients.

While the psychic manifestations were sometimes of a very disturbing nature, nevertheless they did not present the characteristics of genuine psychoses: for example, the indifference and want of interest in surroundings lacked the depth of those afflicted with melancholia or dementia. The restlessness. which was so frequently observed, lacked the characteristic features of exaltation in the motor sphere observed in cases of mania. As mentioned above, while the individual symptoms resembled those of psychoses, the entire picture of each case lacked the depth and definiteness of any of the forms of insanity. Some of the patients had to be removed from their surroundings and isolated, not because they were insane in the proper sense of the term, but because of inconveniences caused by them to others. Besides, the subsequent histories of the last category of patients, as well as of any other patient of the author's series, proved at no time the existence or eventual development of true psychoses. On the other hand, morbid phenomena persisted with a remarkable obstinacy; at times they became more accentuated; at others some improvement was noticeable, but it was only temporary. Some of the author's patients were under observation during a period of ten years and the condition still persisted

Individuals who presented various manifestations of psychoneuroses before they fell into the hands of surgeons had their psychic phenomena decidely aggravated after the uteri and ovaries, or only the ovaries, were removed.

As healthy portions of tissue were invariably found in the removed organs, it is to be supposed that the removal of the latter had some relation to the morbid phenomena observed after the operations.

The logical conclusion seemed to be that great

caution should be used in advising operative procedures on the generative organs and the tendency should be to preserve as much as possible any normal tissue found in the uterus or ovaries.

No operation should be advised on healthy organs if a woman complains of vague nervous disturbances.

Edward L. Cornell.

Vest, C. W.: A Clinical Study of Primary Carcinoma of the Fallopian Tube. Bull. Johns Hopkins Hosp., 1914, xxv, 305.

By Surg., Gynec. & Obst.

The author presents a statistical study of 132 cases of primary carcinoma of the fallopian tube, including 4 such cases from the gynecological department of the Johns Hopkins Hospital. His own cases are reported in detail and include microscopical examination of the tissue removed. From his study he draws the following conclusions:

Primary carcinoma of the tube, while not common, is not as rare as has been supposed, and its possibility must be considered when a tumor lateral

to the uterus is present.

Definite symptoms are not regularly associated with the tumor, but one or more of the following are usually present: a watery, often blood-tinged, vaginal discharge; abdominal pain and induration on one side of the uterus; frequently a tumor is present. The discharge may be intermittent in character. Each tube is involved an equal number of times by the growth, while in about 28 per cent of the cases both tubes are involved.

If the condition is still confined to the tube, a complete operation — hysterectomy, double salpingo-oöphorectomy — should be done; otherwise only palliative measures can be employed. A careful macroscopic, and, if necessary, microscopic, examination should be made of every tubal tumor removed before the abdomen is closed. In some cases the complete operation was done at a second laparotomy after the nature of the growth was discovered.

A microscopic examination should be made of a serohæmorrhagic fluid obtained from a lateral tumor by pelvic puncture. Such a tumor should be considered malignant until proven otherwise.

Primary carcinoma of the tube may be present

in association with an ovarian cyst.

The tumor is of a high grade of malignancy. At onset it may be of slow growth, but recurrence is soon noted after operation. In most cases the condition is too far advanced for permanent relief when surgical aid is sought. Only 4 patients are known to be well five years after operation.

GEORGE E. BEILBY.

#### EXTERNAL GENITALIA

Watkins, A.: Vesicovaginal Fistula. J. Arkansas M. Soc., 1914, xi, 98. By Surg., Gynec. & Obst.

The author describes a vesicovaginal fistula which followed vaginal hysterectomy. The bladder

wound was unsuccessfully repaired at the same sitting at which the injury was done. This failure the author attributes to deficient drainage from the urethral catheter left in at the time of operation.

Some months later repair was again attempted. This operation was again unsuccessful on account of urethral irritability requiring the removal of the catheter left in the bladder. About thirteen months after the primary fistula occurred, still another attempt at closure was made. This was preceded by bladder irrigations for the cystitis and supra-

pubic cystotomy for drainage.

The bladder was denuded by the original route for one and one-half inches in all directions and the bladder wall was sutured with two layers of No. o chromic gut. This suture was covered by a peritoneal fold from the abdomen, followed by suture of the vaginal mucosa. The closure was successful. The author believes that the suprapubic drainage and the interposition of the rapidly healing peritoneum were important elements in the successful outcome of the last operation. MAURICE J. GELPI.

#### Pollard, T. G.: Some General Considerations of Leucorrhea. South. Pract., 1914, xxxvi, 444.

By Surg., Gynec. & Obst.

The author discusses the causes and treatment of leucorrhœa. He is of the opinion that this condition is too often considered as a disease and not as a symptom of a disease. He discourages the belief of the laity and a few practitioners that leucorrhœa is common to all women and says because of this idea many early cases of uterine cancer have been overlooked.

The most frequent causes of leucorrhœa in virgins are: (1) cervical erosion and backward displacement of the uterus associated with endometritis, (2) vaginitis, and (3) benign and malignant tumors of the uterus and adnexa. If the discharge is slight in amount and only occurs at intervals at or about the time of menstruation and is not accompanied by menstrual pain, with the general condition of anæmia present, for the time being the physician is justified in regarding anæmia as the cause.

In married women, because of the greater ease in making thorough examination, the cause should be studied more carefully. The following causes are given: (1) Cervical erosion associated with an endometritis, the erosion most likely being situated at the site of an old laceration. The discharge may be of a simple mucous character composed of secretion from cervical glands, or purulent, due to bacterial invasion. (2) Infection of Bartholin's glands may be another cause. (3) Vaginitis is another cause and may result from the use of pessaries or strong antiseptics. (4) New-growths of the uterus, sarcoma, and carcinoma are the other causes.

The first thing to do is to locate the most probable cause of the trouble; then palliative treatment should be used, such as hot vaginal douches or vaginal applications in the milder forms of vaginitis and slight cervical erosions. If endometritis is present, curettement is indicated. Lacerations should be repaired and uterine displacements corrected. If the leucorrhœa is due to trouble in the tubes, malignant disease of the uterus, or sloughing tumors, operative treatment is necessary.

WILLIAM D. PHILLIPS.

#### Taussig, F. J.: The Prevention and Treatment of Vulvovaginitis in Children. Am. J. M. Sc., By Surg., Gynec. & Obst. 1014, cxlviii, 480.

The author reports 66 cases of vulvovaginitis ranging in age from 3 weeks to 12 years. Fortythree of these cases were investigated as to home conditions and possible sources of infection.

Concerning the prevalence of this condition Seippel estimates that 500 cases occur annually in Chicago, and Pollock estimates 800 to 1,000 in Baltimore. Jeans examined routinely 262 girls over one year of age at the Children's Hospital, St. Louis, and

found 14 cases, or 5.3 per cent.

Gonococci were found in 63 per cent of the 66 cases at some time, so that for practical purposes vulvovaginitis means gonorrhœa. The exposed position of the vulva of young girls and the delicate squamous epithelium of the vulva and vagina render them specially liable to infection.

The source of the infection was most commonly from other girls of the same age already infected. Direct nfec ion from an adult is the exception.

The manner of the transmission may be by the hands of the attendant, cloths, clothing, etc., the bath and the lavatory, particularly of the schools. The latter is by far the most common, due to the fact that the vulva of the girl almost invariably comes in contact with the lavatory seat, where the secretion containing gonococci will remain for a long time undried and virulent.

The symptoms were few and complications in-

frequent.

The treatment consisted of the injection of 15 to 60 drops of a silver solution several times in succession from a blunt-pointed urethral syringe; rest in bed for the first two weeks with injections of 25 per cent argyrol once or twice daily, changing to I per cent silver nitrate solution, and later to 2 to 4 per cent silver nitrate twice, and, finally, once, a week. The treatment must be carried out systematically for a long time.

For institutions, the following suggestions as to

prevention are made:

I. The ex mination of a vaginal smear from all girls before admission to determine the presence of gonorrheal infection. If present, the children should be excluded.

2. Adequate facilities for isolating institutional cases with this infection in which the diagnosis had

not been made on admission.

3. Special nurse, separate fever thermometers,

vaseline, etc., for the infected children.

The large number of endemic cases in all the cities are most difficult to reach. The following measures are suggested for the control of this disease:

I. The instillation of a drop of 2 per cent silver nitrate solution in the vestibulum vagina of all newborn girls whose mothers show evidence of gonorrhœa.

2. Making vaginitis in children a disease re-

portable to the Board of Hea'th.

3. Instruction of parents of infected children through the visiting nurse regarding preventive

measures to limit the infection.

4. Investigation by the visiting nurse as to the probable origin of the infection in each case with a view to preventing the contamination of other children in the same house.

5. The adoption of a U-shaped seat with low bowl and other precautionary measures to prevent the spread of infection through the public lavatories in schools, playgrounds, comfort stations, and tene-

The last is the most important of all, as in the author's experience the lavatory seat in the school seemed to be the great source of the infection.

S. A. CHALFANT.

#### MISCELLANEOUS

Newman, D.: Incontinence of Urine in Women. Lancet, Lond., 1914, clxxxvii, 940.

By Surg., Gynec. & Obst.

The most common causes of simple incontinence of urine in women — that is, loss of control unassociated with disease of the bladder or the urethra - are injury received during parturition and overdistention of the urethra and neck of the bladder by instruments. There are other cases where no history of traumatism can be discovered. The former are more amenable to surgical treatment than the latter, but even these may be much improved by the

following operation:

With the patient either in the lithotomy or in the elbow-knee position, the posterior wall of the vagina is depressed so as to expose the anterior wall fully. The bladder is distended with 12 ounces of boric solution. A straight No. 14 steel bougie, with a knob the size and shape of a horse-bean half an inch from its point, is introduced into the bladder at first fully and then partly withdrawn so that the knob comes down to and locates the neck, and by elevating the handle of the bougie the knob is made to throw out the posetrior wall of the bladder immediately above the sphincter. Three sutures, one anterior and two lateral, are now passed through the lips of the os and the uterus is dragged downward so as to give a clear view of the anterior wall of the vagina.

A median vertical incision is made from the uppermost point of the knob and along the middle of the stem for a distance of one and a half to two inches. With blunt-pointed scissors cutting on the flat, the mucous membrane and muscular coats of the vagina are carefully separated on both sides of the median incision. The dissection should be made right down to the submucous tissue of the bladder and urethra, but great care must be taken not to expose the vesical mucous membrane itself. The vaginal mucous membrane is removed over a lozenge-shaped area the center of which corresponds with the position of the most prominent part of the knob of the bougie; the upper angle is just over the point of the instrument. The lower angle corresponds with the stem, while the two other angles point outwards, one on either side. Incisions are then made to join the apices and a lozenge-shaped portion of vaginal mucous membrane is removed, exposing a corresponding area of raw surface, the floor of which covers the neck of the bladder and the first half-inch of the urethra.

The next stage of the operation is the suturing, the bougie still being in position. The sutures are chromic catgut and are introduced as follows: A deep row is planted, and on the left lip of the wound the needle is passed from left to right; it enters immediately under the vaginal mucous membrane and comes out one-eighth of an inch to the left side of the center line of the bougie; it is then carried over the rawed surface to one-eighth of an inch beyond the right side of the bougie, where it penetrates the tissue, and is brought out on the right lip of the wound. Six sutures are passed in this way. The bougie is then withdrawn and the sutures are tied, cut, and buried. A second row of the fine gut sutures is applied to unite the margins of the wound in the vaginal mucous membrane, and the operation is completed.

No special after-treatment is required, except that it is well for a small-sized rubber catheter to be retained for the first six or eight days and the parts should be cleansed gently twice daily.

EDWARD L. CORNELL.

Lydston, G. F.: Implantation of the Generative Glands and Its Therapeutic Possibilities. N. Y. M. J., 1914, c, 745.

By Surg., Gynec. & Obst.

The sex glands, the testicle and ovary, are known to have a double function: (1) the ordinary procreative function, and (2) the production of an internal secretion.

The repletion of the internal secretion may possibly have a marked effect in the retardation of senility. Aberration of secretion in the sex glands may have an effect (1) on nutrition in general; (2) on brain and nerve integrity; (3) on sex power and activity; and (4) on senile pathology and physi-

The presence of an internal secretion of the testicle was first shown in 1849 by Berthold, who transplanted the testes of cocks to the abdominal cavity with resultant preservation of sex qualities. Since then cases of successful implantation of testes and ovaries in animals and human beings have been reported. Bernard, in 1880, at the age of 72, injected himself with testicular extract from animals, with marked improvement in physical and mental activity.

The name "hormone" is given to the substance in the internal secretion which affects the functions of other organs. Continuous doses of some hormones are necessary to maintain physiological activity. Hormones do not produce antibodies, their therapeutic effect being the result of a stimulating tonic action on the organism in general. The ova and spermatazoa apparently depend upon the stimulus produced by the hormone for their formation and virility. In the ovary the corpus luteum furnishes the internal secretory hormones.

In the testicles the interstitial cells of Levdig, situated in the interstitial tissue between the tubuli seminiferi and of mesodermic origin, apparently These cells have furnish the internal secretion. been shown to proliferate in implanted testes. The X-ray does not destroy the interstitial tissue but does destroy the glandular tissue, and as the effect of the X-ray is to destroy the spermatazoa-producing function of the testes but does not affect the secondary sex characteristics, it is considered a proof of the source of the internal secretion in the interstitial cells.

The author obtained the testes from an 18-yearold suicide, removing them in an aseptic manner

and placing them in sterile salt solution. He made an incision in his own scrotum and planted one testicle previously half decorticated and with the epididymis removed, in a pocket made beneath the deep fascia at the bottom of which pocket lay the spermatic cord. The decorticated portion apparently "took," and the author experienced a sense of unusual physical and mental vigor.

If atrophy occurs, successive implantation may be used but the author believes the effect may be permanent because the interstitial tissue may remain and produce the hormone and also the hormone may have accomplished its work of regeneration so successfully that no further therapeutic indication for hormone action will be evident.

In implanting the testes the tunica propria is left intact except for two to four narrow strips two or three mm. in breadth running the whole length of the testicle which allow the entrance of the nutritive juices and the formation of vascular adhesions. The epididymis should be removed, the gland implanted within 24 hours after removal, if possible, and meanwhile kept in cold normal salt solution or Ringer's solution. Asepsis should be absolute and the testes handled very carefully. The most favorable site of implantation in the male is near the testis just without the tunica vaginalis to which it will adhere; the pelvic properitoneal space or the mons veneris may be used. In the female the choice of sites appears to be the properitoneal space, the cul-de-sac of Douglas (extraperitoneal), the labium majus, beneath the mammary gland, in the pubic region, or the rectus muscle.

In implantation in either sex, care should be taken (1) to make as limited an incision as is compatible with the insertion of the gland, as the gland is soft and the skin and fascia elastic, a very small incision will suffice; (2) to make sure that the dissection of the pocket shall be as dry as practicable and to traumatize the tissues as little as possible; (3) to avoid injuring the delicate gland tissue during its preparation and implantation; (4) to use the finest chromic gut or, better perhaps, iodinized gut. and insert no more sutures than are actually necessary to a perfect closure — the purse-string suture for the fascia is ideal; (5) at all times to avoid rough manipulation of the implanted glands during healing, and especially to manipulate it as infrequently and as gently as possible while adhesions and vascular supply are forming.

Definite results should not be expected before six or eight weeks. The glands to be used should be obtained from subjects free from disease, with the possible exception that in the treatment of tuberculosis the gland may be taken from a person suffering with tuberculosis provided the gland itself

is not infected.

Six case reports of implantation are given including the one the author performed on himself: one for nervous wreckage due to a pelvic operation performed fifteen years previous, one for impotence in a man aged 58, two for dementia præcox, and one for senile dementia.

In addition to the reported cases 12 operations had been performed on institutional cases - 2 females and 8 males; 3 being cases of senile dementia, 2 cases of dementia præcox, 2 of epilepsy, and 3 of general paresis. None of these latter cases were

very successful.

The results of the author's implantation on himself were a sense of exhilaration within twenty-four hours which disappeared with the occurrence of cedema and inflammation around the site of the operation and recurred on the seventh day when there arose a sense of stimulation, an ability to endure physical and mental labor on less sleep than formerly, a marked reduction in blood-pressure with a softening of the arteries, a disappearance of previous attacks of cardiac irritation, an increase in the range of accommodation of the eye, a marked improvement in the blood circulation in the skin with resulting resistance to cold, and marked improvement of a chronic skin lesion. There was an increase of ten pounds in weight.

The conclusions are as follows:

1. At least temporarily, probably permanently, and indubitably therapeutically, successful total or partial implantation of human sex glands in both male and female is practicable.

2. Glands taken from the living subject are most desirable, though rarely obtainable. The closer the blood relationship of donor and recipient the better, but such relationship is not necessary for

purely therapeutic purposes.

3. Judging by his own auto- and hetero-experiments, and with due respect to Carrel's observations, the author believes that while glands frozen before decomposition may be available, they must be used without freezing and very promptly after removal

from the body to obtain a fair average of successes. Glands taken from the healthy dead body at any time prior to the beginning of decomposition are of equal therapeutic value to those taken *in vivo*, if implantation succeeds. Portions of glands are to a certain degree therapeutically serviceable, according to conditions and dose.

4. Where there is no necessity of incurring risk, the subject from which the glands are taken should

be selected with extreme care.

5. The ovary and the testis probably are alike in their susceptibility to implantation, both from the living to the living and from the dead to the living. If any difference exists, it seemingly is in favor of the ovary. In human beings the gland of one sex is transplantable upon the other, and it is possible that the hormone of the one is useful to the other. Lydston's experiments apparently show that the tissues of the female are more hospitable to the implanted male sex glands than are the tissues of the male.

6. The benefits of implantation probably accrue irrespective of the site of the implantation, but the vicinity of the peritoneum (extra-abdominal) in the female and of the tunica vaginalis in the male, are

the sites of election.

7. The internal sex gland secretion is stimulant, nutrient, tonic, and reconstructive, and should increase resistance to disease. Certain chronic infections, notably tuberculosis, serious anæmia, neurasthenia, and conditions of profound debility should be benefited by implantation.

8. The development of senility possibly can be retarded, and longevity increased by internal sex secretion derived fr m implantation. The climacteric may be postponed by it, or the disagreeable

features of the climacteric relieved.

9. Used at a very early period in the disease, internal sex secretion should theoretically be the logical remedy for dementia præcox and allied conditions.

10. The internal sex gland secretion via implantation has a very useful field in the treatment of

impotence in the male.

11. Implantation (with or without anastomosis in the male) possibly may have a certain range of usefulness in sterility in both sexes.

12. Defective and aberrant psychical or physical sex development and differentiation — inversions

and perversions — are definite indications for sexgland implantation. Certain cases of cryptorchidism and imperfect testicular development are an especially promising field for it.

13. Chronic diseases of the skin due to or modified by nutritional disturbances — notably certain types of chronic eczema, psoriasis, and ichthyosis — in a certain proportion of cases apparently are likely to be benefited, and possibly cured by sex-gland im-

plantation.

14. That arteriosclerosis will in its early stages be benefited by sex-gland implantation is probable. Inferentially, if taken early, senile dementia pos-

sibly may show beneficial results.

15. All conditions incidental to sex-gland mutilations in either sex afford a positive indication for sex-gland implantation, the probability of benefit being inversely as the length of time that has elapsed since the mutilation, and dependent on the age at which it occurred.

16. The most important point of all is that, in properly selected cases, successful implantation ought inevitably to increase physiological efficiency, with all the benefits accruing therefrom. With increased physiological efficiency come individual

and social efficiency.

17. Opportunities should be sought in the human subject for histological study of implanted glands at varying periods after implantation, to determine in what degree both generative and internal secretion

gland tissues endure.

18. Every effort should be made to so amend our laws that viable tissues of all kinds, notably internal secretory glands, shall become available to science. To this end the public especially should be made to understand that the sacrifice of a portion of thyroid or of a single ovary or testis by a living subject is not disastrous. The author believes that possibly there are times when such a sacrifice would restore reason, perhaps even save life. Legislation and public sentiment should favor scientific research. Between the antivivisectionists on the one hand, and popular reverence for the dead human body on the other, the material is limited. Why should there be a waste of material which, if properly used, possibly might add much to the health, happiness, efficiency, and even to the longevity of the human race? Let us strive for the conservation of biological energy. D. H. BOYD.

### OBSTETRICS

#### PREGNANCY AND ITS COMPLICATIONS

Moore, B.: The Management of Pregnancy and Normal Labor. J. M. Ass. Ga., 1914, iv, 173 By Surg., Gynec. & Obst.

In a short paper the author brings out the following points: The care of the pregnant woman should commence as soon as the patient has reason to believe that she has conceived. The patient should be made to feel that her condition is normal and physiological. Her mental surroundings should be as cheerful as possible. Labor should take place certainly not later than 282 days after conception. Labor should not be checked after it has been started. The use of obstetrical forceps should be avoided if possible. EDWARD L. CORNELL.

Sutcliffe, L. E.: A Case of Ruptured Ectopic Gestation Complicated by Splenomedullary Leukæmia. Brit. M. J., 1914, ii, 570.

By Surg., Gynec. & Obst.

The case reported presented a splenomedullary leukæmia with a marked and prolonged pyrexia, complicated by a ruptured ectopic gestation with marked shrinkage of the spleen coincident with the hæmorrhage, and, later, splenic enlargement during the reactionary stage. The patient made a complete recovery. D. H. BOYD.

Myssey, R. D.: The Diagnosis of Extra-Uterine Pregnancy; a Study of One Hundred and Sixty-Eight Cases. St. Paul M. J., 1914, xvi, 588. By Surg., Gynec. & Obst.

The author presents a review of the cases occurring in the Mayo clinic during the past ten years. Attention is directed to the diagnosis of the subacute and chronic cases, the clinical picture of which differs somewhat from that of the recently ruptured cases.

A history of miscarriage was obtained in 50 of the cases while 60 had never been pregnant. Four cases had previously been operated upon for extrauterine pregnancy. One hundred and six cases were diagnosed correctly before the operation. Of the remainder, chiefly tubal moles and abortions, the diagnosis was made variously as pelvic tumors, appendicitis, pelvic inflammation, and gall-stones, while in a few cases exploratory section was advised for pelvic and abdominal conditions with no suggestion of ectopic pregnancy.

As to symptomatology, pain was the most common feature, while pain in the rectum or painful defecation, if present, was almost pathognomonic. Disturbance of menstruation should be considered as to the amount, color, odor, consistency, and continuance of the flow. The physician should not be misled by the presence of chills and fever with symptoms of pelvic disorders.

PHILIP F. WILLIAMS.

Farber, E. M.: A Case of Extra-Uterine Pregnancy with Prolonged Retention of the Fœtus. Lancet, Lond., 1914, clxxxvii, 794.

By Surg., Gynec. & Obst.

Farber gives a detailed history of a case of missed tubal abortion which occurred in the Zenana Mission Hospital, Bhiwani Punjab. Since the size of the fœtus is not stated in the report it is difficult to determine whether this was a case of missed labor

The patient was operated on about 3 months after she became pregnant. The fœtal sac was not entirely removed at the operation on account of its being densely adherent to the intestines and the pelvic organs. The edges of the sac were ruptured to the lower angle of the abdominal wall, and the cavity was drained. Recovery followed, there being a slight fever in the beginning of convalescence. EMIL SCHWARZ.

Olow, J.: Treatment of Extra-Uterine Pregnancy Interrupted in the Early Months (Über die Behandlung der in den früheren Monaten unterbrochenen Extrauterinschwangerschaft). Monatschr. f. Geburtsh., u. Gynäk., 1914, xl, 205.

By Surg., Gynec. & Obst.

Even in acute cases of ruptured extra-uterine pregnancy some authors advise expectant treatment, for they hold that if the patient does not die immediately she is apt to survive without operation, being, therefore, unnecessary. Even among those who admit the advisability of operation there is a dispute as to whether it should be immediate or deferred. Many American physicians advocate the latter plan. Others hold that each case should be treated individually, which is equivalent to expectant treatment with later secondary operation. When it comes to the chronic cases there are still more operators who advise late operation or none at all.

Olow advises immediate operation, as a rule, in all cases. He believes that intraperitoneal hæmorrhage from any cause indicates immediate operation. As to the individualistic treatment, it is impossible to decide which cases will recover if left

The advocates of deferred operation do not wish to operate in shock, but Olow believes that shock in extra-uterine pregnancy is generally due to anæmia, and that it will, therefore, increase rather than decrease. In the chronic cases the patient is always in danger of renewed hæmorrhage if operation is not performed, and this danger more than offsets the advantage of waiting for recovery from the anæmia

of the first hæmorrhage.

To demonstrate the advantages of operation over individual treatment in chronic cases Olow compares his material of 64 cases with that of von Scanzoni, who advocates individual treatment. Comparison of the figures shows that the results of operation are fully as good with reference to life, capacity for work and for conception, etc., and are much better with reference to the time required for recovery.

A. Goss.

Vértes, O.: Pathogenesis of Eclampsia (Zur Pathogenese der Eklampsie).

\*\*Onnäk.\*, 1914, xl, 466.\*\*

By Surg., Gynec. & Obst.

Vértes performed a series of experiments which show that animals can be sensitized by their own albumin as well as by foreign albumin. The symptoms of this hypersensitiveness are practically identical with those of eclampsia, and moreover the organs of the animals showed the same changes post-mortem as are found in the organs of patients who have died of eclampsia; he therefore believes that eclampsia is a manifestation of anaphylactic shock. This anaphylaxis is produced by the absorption of chorionic villi, which Schmorl has shown takes place during pregnancy. The albuminuria of pregnancy is not a simple mechanical disturbance of kidney function, nor yet a chemical one caused by the products of fœtal metabolism, but is a premonitory stage of eclampsia, which is identical with it in etiology, and is only a more advanced stage of the same condition. A. Goss.

Farr, C. B., and Williams, P. F.: The Total Non-Protein Nitrogen of the Blood in the Toxemias of Pregnancy. Am. J. Obst., N. Y., 1914, lxx, 614.

By Surg., Gynec. & Obst.

To their previously reported findings in a series of 20 pregnant women, Farr and Williams now add their results in 5 normal cases and 15 cases showing some renal changes or toxic symptoms during pregnancy. The method employed was that of Folin, and, in a few instances, titration according to Kjeldahl, in addition to the use of the Dubosq colorimeter. An exact tabulation of their findings is given. The following are their conclusions:

As a rule the total non-protein nitrogen of the blood does not exceed 30 mg. per 100 ccm. of the entire blood in a normal pregnancy. In those pregnant women who have renal changes associated or not with toxic manifestations, as convulsions, there is usually a slight and, in most cases, a definite increase in the non-protein nitrogen, but the increase bears no relation to the severity of the symptoms. This degree of retention corresponds to that seen in parenchymatous nephritis as shown in the work of Farr and Austin. The amount of phenolsulphonephthalein eliminated varies with

the clinical picture so much that it does not appear to be of much value either as a diagnostic or prognostic aid in the toxemias of pregnancy. The authors feel forced to conclude that the close observance of clinical phenomena, the estimation of the blood-pressure, and the examination of urine for albumin and casts, are of greater importance than the use of either of the two newer methods they have employed.

Anderes, E.: Artificial Termination of Pregnancy and Sterilization at One Operation (Unterbrechung der Schwangerschaft und Sterilization auf abdominellem Wege in einer Sitzung). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 443.

By Surg., Gynec. & Obst.

In cases in which abortion is absolutely indicated, as in advanced tuberculosis, severe heart disease with failure of compensation, and severe chronic kidney disease, sterilization should be performed at the same time, for it is useless to subject the woman to the dangers of repeated pregnancy and abortion, and there is no hope of the condition improving so that a later pregnancy could be allowed to continue.

Anderes formerly terminated the pregnancy by the vaginal route and then sterilized through the abdomen, but he has found that asepsis is more easily preserved by performing both operations at the same time abdominally. The uterus is opened, the contents removed, and the uterus thoroughly curetted through the incision; then about 3 cm. of each tube is resected at the uterine end. This is preferable to complete excision of the tube, because it is not necessary to ligate any of the large vessels, and consequently there is less danger of thrombosis. Excessive hæmorrhage from the uterus is prevented by previous injection of ergot. There has been less hæmorrhage with this method than with vaginal abortion. The author has operated in fifteen cases in this way with good results.

A. Goss.

Rabinovitz, M.: End-Results of Criminal Abortion. N. Y. M. J., 1914, c, 808.

By Surg., Gynec. & Obst.

Three abortion cases are reported. In the first, a silk bougie was forced through the uterine wall into the peritoneal cavity, necessitating a laparotomy for its removal. In the second, a portion of the mesentery had been torn from its attachment to the ileum with resulting gangrene of that portion, complicated by an invagination of several coils of intestine in the mesenteric laceration. In the third case septic peritonitis with volvulus and death occurred.

The death rate from criminal abortion in hospital practice is estimated as 33.3 per cent. The present methods of dealing with abortionists are considered inefficient. Social ostracism and legal penalties do not seem to prevent the evil. The "legalization of the early interruption of pregnancy" is considered the solution of the difficulty. Then "the ethical surgeon, swayed by the same motives that

govern all his actions, will use proper discrimination, moral suasion whenever possible, and, as a last resort, at least render his patient proper aid, scientific services, safe from chronic invalidism or death."

D. H. BOYD.

Wright, G. A.: Spontaneous Rupture of Four and One-Half to Five Months' Gravid Bicornate Uterus; Operation Followed by Conception of the Other Horn. West. M. News, 1914, vi, 213.

By Surg., Gynec. & Obst.

A case is reported which showed the signs of abdominal hæmorrhage rather markedly. patient was operated on after her general condition was slightly improved. The abdominal incision disclosed a bicornate uterus; the left horn was ruptured, the fœtus and placenta were in the abdominal cavity. The pregnant cornua with the tube and ovary were removed, and the patient recovered without any complications.

Twenty months later the patient was delivered of a healthy child after a normal short 6-hour labor. The breech presentation occurring at this delivery is explained by the author as a result of the changes of the musculature of the uterus, due to the above-EMIL SCHWARZ.

mentioned operation.

Geelmuyden, H. C.: Diabetes and Pregnancy (Diabetes og graviditet). Norsk. Mag. f. Lægevidensk., 1914, lxxv, 1147. By Surg., Gynec. & Obst.

Geelmuyden comments on the connection between the functioning of the internal female genital organs and carbohydrate metabolism, saying that glycosuria develops regularly in about 10 or 12 per cent of all pregnancies-some have encountered it in 40 per cent. Usually the sugar in the urine in this benign pregnancy glycosuria is lactose, but it may be grape sugar or both. The proportion of sugar in the urine may be so large as to suggest severe diabetes with acidosis. Differential points are its onset during the pregnancy, its independence of carbohydrates in the diet, and the absence of polyuria and excessive thirst. He has known instances of these latter symptoms, polyuria, thirst, and pruritus occurring with unmistakable pregnancy glycosuria.

Knowledge that the urine was free from sugar before the pregnancy is a great help; also finding that the acidosis does not fluctuate with the intake of carbohydrates. A normal or subnormal proportion of sugar in the blood sustains the assumption of the benign form. If actual diabetes is suspected the diet must be very carefully regulated, as there seems to be a special liability to acidosis and coma in pregnant women.

Burke, R. A.: The Association of Cholelithiasis and Pregnancy. J. Mich. St. M. Soc., 1914, xiii, By Surg., Gynec. & Obst. 599.

Burke reports 4 cases of gall-stones complicating pregnancy: 3 operated on during the pregnancy with good recovery and I operated upon during the puerperium with death due chiefly to previous hæmorrhage.

The following conclusions are reached:

1. Gall-stones are most frequent in women, the age ranging from 18 to 32 years.

2. From the cases cited it is evident that child-

bearing has a direct effect on gall-stones.

3. In the above series of cases the onset of the attack was from the second to the fourth month.

4. Chills, elevation of temperature, and jaundice

of a severe type are frequent.

5. In 3 cases the operation was performed without disturbing pregnancy, the mortality being nil; whereas the case that went the full term with attacks of colic, chills and fever, followed by jaundice, and the operation was performed after delivery,

had very little chance of recovery.

6. There is no more danger of an operation for gall-stones interrupting pregnancy than any other abdominal operation performed during gestation. The diagnosis of cholelithiasis during pregnancy and the puerperium will not be difficult if the possibility of the complication is borne in mind. Much reliance can be placed upon the jaundice, which is more prevalent in the pregnant woman than in the nonpregnant woman with gall-stones. D. H. BOYD.

#### LABOR AND ITS COMPLICATIONS

Southwick, G. R.: The Relief of Pain in Normal Labor, and a Brief Consideration of Twilight Sleep. N. Eng. M. Gaz., 1914, xlix, 527. By Surg., Gynec. & Obst.

In an effort to relieve the pain of labor without detrimental loss of conciousness and voluntary effort, 1:400 solution of novocaine, with adralgin, and quinine, and urea hydrochloride were injected at the sides of the cervix uteri and in the perineum on either side near the pudic nerves, to block off the transmission of pain through these nerves. The results were good in the second stage of labor and there were no untoward results from either solution:

Pain in the first stage of labor is relieved by the use of chloral hydrate, 20 grains in a starch enema, and five three-drop doses of tincture of gelsemium every half hour. Nitrous oxide and oxygen administered during the second stage by a competent anæsthetist is commended.

Narcophin, a derivative of opium, of slower action but longer duration than morphine, is said to dimin-

ish pain of labor 50 per cent.

Narcophin and scopolamine are the drugs used in "Twilight Sleep." A single dose of narcophin is given followed in one hour by 1 to 150 gr. of scopolamine injected deep in the lumbar or gluteal muscles. The patient is kept in a quiet darkened room. Memory tests are repeated at hourly intervals and sufficient scopolamine given to keep the patient slightly amnesic. Labor may be slightly prolonged, but in the second stage forceps may be applied or pituitrin given if necessary. Many women have

safely given birth to healthy children without memory of labor by the use of this method.

D. H. BOYD.

Malcolm, J. D.: Rupture of a Dermoid Cyst into the Cervix Uteri During Delivery. Clin. J., 1914, xliii, 590. By Surg., Gynec. & Obst.

Malcolm reports the case of a woman who, during her tenth puerperium, developed a mass in the pelvis accompanied by fever and discharge. A vaginal incision showed large amounts of pus. Two years later the discharge from the cervix became more intense, then matted hair came out, and digital examination revealed a cavity filled with hair and soft masses, communicating with the cervical canal. At the abdominal incision a cyst was seen originating from the left ovary. The entire tumor, with the uterus and the tube, was removed. Recovery followed. The age of the patient—44 years—justified the removal of the uterus. Emil Schwarz.

Smith, A.: High Forceps and Cæsarean Section. J. M. Ass. Ga., 1914, iv, 148.

By Surg., Gynec. & Obst.

Since the time of the Chamberlens, in 1725, obstetric forceps have been one of the greatest aids in effecting difficult deliveries, though they often leave much to be desired, and compare badly with cæsarean section, where mechanical difficulties of delivery are great, as the following examples show.

In the first case, that of a primipara, aged 19, the following conditions were present: vertex L.O.P., true conjugate 8.25 cm., labor in progress twelve hours, head not engaged, membranes ruptured, cervix almost completely dilated artificially, temperature 99°, pulse 96, child large. Cæsarean section was not done on account of poor surroundings and previous manipulations. Tarnier's forceps were applied under ether, but the head could neither be brought down nor rotated forward. The hand in the uterus showed the left shoulder against the promontory, which was dislodged and rotated with great difficulty and forceps applied in L.O.A. Delivery was accomplished four hours after the application of the forceps; the heart of the child was acting, but there was no respiratory effort. The perineum and sides of the vagina, which were lacerated, were sutured and the patient made a good recovery.

The second case was that of a patient, aged 29, with a history of one miscarriage. Her true conjugate was 8.50 cm., the pubic arch high and narrow. Cæsarean section had been suggested before labor, but was refused. The position of the head was very low before labor, L.O.P. position. Eighteen hours of active labor caused dilatation, but very little progress. Tarnier's forceps were applied under ether, and the child was delivered after one and one-half hours' hard work. The head was cut in several places, but otherwise the child was in good condition. The mother was lacerated to the sphincter and cut on each side to the pubic bones

by the forceps; the repair of the wounds was followed by marked shock and prolonged but complete convalescence.

The third case was a primipara, aged 19, of chunky build, previous history negative, true conjugate 8.34 cm. Examination showed albumin, indican, and cedema — antepartum — but the patient would not diet. The catheter was introduced to start labor about term; pains and convulsions followed. When seen after the first convulsion the pulse was 104 and not strong, the cervix admitted two fingers, vertex R.O.P., head not engaged, membranes intact. Cæsarean section was suggested but not consented to. The cervix was dilated, but the head could not be engaged, even after rotation and vigorous traction. The maternal condition became alarming, necessitating rapid delivery by perforation and cleidotomy. The peritoneum was torn into the rectum; it was rapidly sutured, followed by good reaction and recovery.

The fourth case was the same patient as Case 3. This time she dieted well, but showed slight albuminuria and headache a week before term. High cæsarean section resulted in the delivery of a living child. For a few days the patient's temperature was 99°, and she went home on the tenth day seemingly well. She soon had thrombophlebitis with a temperature of 103° and pulse 148. Her recovery

was slow but permanent.

The fourth case was a primipara, aged 24, of slender build with small genitals; the true conjugate was 8.50 cm.; the arch was narrow. A physiological test recommended by the consultant showed no engagement after 18 hours' hard labor. High cæsarean section resulted in the delivery of a living child. Aside from a rapid pulse the mother seemed in good condition. After arousing from the ether she had severe pains in the epigastrium with pulse of 156, and her face had a pinched appearance. The abdomen when reopened in two hours showed bloody saline solution, which was removed. Nothing was found to account for the pains which were still present; however, they disappeared rapidly, and the patient made a good recovery.

It will be noted that all these patients had true conjugates over 8 cm., and that in the three forceps cases only one child lived and all the mothers were badly lacerated, while in the two cæsarean cases both children lived and the mothers were no worse

for the operation.

Though too few for conclusions, in themselves, these cases are fairly typical and emphasize the importance of examining all cases not proven by labor to have ample room for delivery, and selecting in good time the method which will give both patients the best results. They also show the advantage of cæsarean section over forceps delivery in other cases where prompt delivery is necessary when the cervix is not dilated or readily dilatable.

The cause of pain and shock in Case 4 is unaccountable, unless it was due to the saline being

stronger than usual.

#### PUERPERIUM AND ITS COMPLICATIONS

Fromme, F.: Ligation of the Vena Cava in Puerperal Pyæmia (Über die Unterbindung der Vena Cava bei puerperaler Pyämie). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 388. By Surg., Gynec. & Obst.

Fromme describes a case of puerperal pyæmia with slowly developing thrombosis of the right common iliac in which he ligated the vena cava. The chills stopped, but began again ten days after the operation, and fifteen days later the patient died. The author believes that ligation of the vena cava is indicated in cases of puerperal pyæmia; it renders operative intervention possible in very advanced cases of thrombosis of the pelvic veins. It can be done without any danger of serious circulatory disturbances. In the author's case there was no congestion in the left leg and the chills were stopped. On autopsy the vena cava above the ligation was normal. His mistake was that he did not also ligate the normal common iliac a short distance before its opening into the vena cava. This would have shut off the blood in the sound limb from contact with infected thrombi, and the infected region would have been completely cut off from the normal circulation. He advises that the vena cava be ligated high up just below the opening of the renal veins. This excludes the possibility of communicating vessels between the cava and the infected vein. The operation is not technically difficult. A. Goss.

#### MISCELLANEOUS

Adachi, S.: Diagnosis of Pregnancy by Means of the Antitrypsin Method (Beiträge zur Schwangerschaftsdiagnose mittels des Antitrypsinverfahrens). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 516. By Surg., Gynec. & Obst.

It has long been known that antitrypsin is contained in the blood serum of men and animals, and that it varies under different normal and pathological conditions. It is practically always increased in pregnancy and so attempts have been made to utilize the reaction in the early diagnosis of pregnancy. The Fuld-Gross casein method is the best means of determining the antitrypsin content and this is described in detail. Tables are given of a series of cases examined by the method, including pregnant and non-pregnant women, new-born infants, cases of eclampsia and various diseases.

Adachi has found the method reliable as a diagnosis of pregnancy if certain other conditions can be excluded in which the antitrypsin content is also increased, such as carcinoma, Basedow's disease, nephritis, fever, and some gynecological diseases, including myoma, salpingo-oöphoritis, parametritis, etc. Among 30 clinically positive cases of pregnancy the reaction was positive in 29, or 97 per cent. There is a still further increase in the antitrypsin titer in the second half of pregnancy. Examination of the blood from the cord of new-born infants showed no increase, thus demonstrating

that the antitrypsin from the maternal serum does not pass through the placenta into the fœtal blood. The antitrypsin content in the cases of eclampsia was variable.

A. Goss.

Kolmer, J. A.: Sero-Enzymes in Pregnancy and Disease. Penn. M. J., 1914, xviii, 18.

By Surg., Gynec. & Obst.

Chiefly through Abderhalden's researches it has been established that the introduction of foreign cells or their products into the circulation results in the production of a protective ferment capable of

reducing these foreign bodies into simpler products. Such ferments have been recognized in pregnancy, in cancer, in syphilis, in tuberculosis, and in dementia præcox. Abderhalden's methods, the dialyzation and the optical methods, are briefly described.

The practical value of Aberhalden's pregnancy test is set forth in the following conclusions:

1. It is too soon to express a definite opinion of the specificity and diagnostic value of this reaction. Most reports have been based upon the dialyzation method. According to Abderhalden, Veit, Frank and Hermann, Franz and Jarisch, Petri, Judd, Schwarz, and others, the ferment is highly specific and the test is of value in the diagnosis of pregnancy.

2. The reaction appears in the middle of the second month, and disappears in from ten to fifteen days after pregnancy has been interrupted, regardless of whether the fœtus is born before, at, or after, the normal period of gestation. Nursing has no effect upon the reaction.

3. The reaction has been recommended in making an early diagnosis of pregnancy, when the symptoms and physical signs are indefinite; also in making a differential diagnosis between pregnancy and tumors of the pelvis.

 The reaction is liable to be positive in hydatidiform disease and in chorio-epithelioma.

5. In acute febrile and cachectic diseases the serum may contain relatively large amounts of dialyzable compounds; positive reactions occur in tuberculosis of the female generative organs.

6. All investigators in this field are in general accord regarding the constant presence of the reaction in the serums of pregnancy, but there is a growing tendency to regard the ferment as non-specific and capable of splitting the coagulated proteid of other organs, and, indeed, of organs from lower animals. The author regards a negative reaction of more value in excluding pregnancy than a positive reaction in establishing the diagnosis of this condition.

D. H. Boyd.

Falls, F. H.: A Study of the Ferment Activity of the Blood-Serum During Pregnancy and Under Normal and Pathological Conditions. J. Am. M. Ass., 1914, lxiii, 1172.

By Surg., Gynec. & Obst.

In a brief review of the literature the author shows that about as many men both in this country and abroad are opposed to Abderhalden's claims for the specificity of the ferments in the blood of pregnant women as support his contentions. He feels that much of the confusion that has arisen regarding the value of the test has been caused by the numerous modifications in the technique. These modifications render the results unfit for comparison either with the work of Abderhalden and his school or with each other. Only by rigidly adhering to a uniform and standard technique can a sufficient amount of data be accumulated by various workers so that judgment can be rendered as to the value of the test as an addition to our diagnostic armamentarium. A brief description is given of the technique used by the author, and a report made of 145 cases.

Twenty-nine pregnancy cases were examined, 12 puerperal cases, and 17 normal cases, leaving

87 cases of various pathologic conditions.

The latter were cases of lobar pneumonia, typhoid fever, acute rheumatic fever, pulmonary tuberculosis, nephritis, carcinoma, meningitis, diabetes, fibroids, pernicious anæmia, splenomyelogenous leukæmia, malaria, syphilis, hypopituitarism, head tetanus, dementia præcox, and alcoholic neuritis.

The reaction was practically always present in the pregnant cases, and was also positive in 25 per cent of apparently normal cases; of these, however, one had had a light meal one hour before the test and so did not fill Abderhalden's requirements; another had chronic constipation so could not be classed as normal. Many of the pathological conditions gave reactions, comparatively few being negative.

The conclusions are as follows: From these results it would seem that there is a ferment present in the serum of pregnant and puerperal women in most cases, and it can be demonstrated by the Abderhalden dialysis method. Under the same conditions normal blood, sometimes, and blood from various pathological conditions, frequently, gave the same reactions. The strength of the reaction varied with the disease present in each case.

A large number of pathologic conditions may give the reaction; and hence would have to be ruled out when the test was applied to a given individual

for the diagnosis of pregnancy.

Quantitative estimation of the strength of the reaction is of little value in differentiating pregnancy from other conditions that give a positive reaction.

The author suggests that the positive reaction obtained in these various conditions may be due to the presence of some abnormal source of ferment in the body rather than, as Abderhalden holds, to specific ferments elaborated by the body as a whole for the breaking down of foreign protein as a protective measure.

Bolaffio, M.: Anaphylaxis and Its Relation to Pregnancy (Anaphylaxieversuche in Beziehung zur Schwangerschaft). Ztschr. f. Geburtsh. u Gynäk., 1914, lxxvi, 498. By Surg., Gynec. & Obst

Bolaffio undertook a series of experiments to determine whether, as has frequently been claimed,

eclampsia is a manifestation of anaphylaxis caused by sensitizing the organism by the albumin of the fœtus. He tested guinea pigs with extract of fœtal organs, extract of placenta, and fœtal serum but could not produce anaphylaxis with any of these substances. Neither did the amniotic fluid produce hypersensitiveness. He therefore rejects the theory that eclampsia is a condition of anaphylaxis. Of course if by anaphylaxis is meant only a disease caused by the cleavage products of albumin, eclampsia may be such a disease; not one in which placenta is katabolized by specific ferments. but rather one in which the albumin of the blood, kidneys, liver, etc., is katabolized by placental ferments. There is no experimental evidence that it is a true anaphylaxis.

Cole, H. N., and Ruh, H. O.: Pemphigoid of the New-Born (Pemphigus Neonatorum), with Report of an Epidemic. J. Am. M. Ass., 1914, lxiii, 1159. By Surg., Gynec. & Obst.

The authors report nine cases of pemphigus neonatorum occurring as an epidemic in a maternity hospital. The staphylococcus aureus was cultivated in pure culture in all cases in which unbroken vesicles could be found. In the first case a bacteræmia developed resulting in death on the twelfth day. An autogenous vaccine was made from this case but too late to use it, but it was used successfully in other cases and seemed to give prompt results when other measures failed. The infections were apparently carried from one to another, and despite strict precautions and fumigation of separate rooms the epidemic became so extensive that it was necessary to close the institution for a thorough disinfection after which no new cases developed.

Because of its severe epidemic characteristics and high mortality, the authors believe the disease should be placed among the reportable cases. Because of the striking results obtained, the use of the autogenous vaccine is strongly recommended.

EDWARD L. CORNELL.

Fournier: Use of Extract of the Posterior Lobe of the Hypophysis in Placenta Prævia; Delivery at Term and Post-Abortion Retention of the Placenta (Del'emploi del'extrait du lobe postérieur. de l'hypophyse dans le placenta prævia, la délivrance à terme et la retention placentaire post-abortive). Bull. Soc. d'obst. et de gynéc. de Par., 1914, iii, 370. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author gives a report with detailed case histories of three cases that reacted excellently to pituitrin. In the first case the placenta was delivered spontaneously an hour after the injection of pituitrin. In the second case, one-half hour after the injection immediate active contractions began, followed by the expulsion of the child. The third case was complicated by two fibroids of the uterus as large as oranges which interfered with the discharge of the placenta. A quarter of an hour after the injection of hypophysin the placenta was discharged spontaneously.

Sachs, E.: Further Experience with Pituglandol in Obstetrics, with Special Reference to Intravenous Injection (Weitere Erfahrungen mit Pituglandol in der Geburtshilfe, mit besonder Berücksichtigung der Verwendung der intravenöser Injektion). Monatschr. f. Geburtsh. u. Gynük., 1914, xl, 544. By Surg., Gynec. & Obst.

Sachs bases his conclusions in regard to pituglandol on 280 cases treated from 1912 to 1914. Case histories of 40 are given to illustrate special points in the discussion. He finds that it is indicated in cases where the contractions are defective. and even in cases where the pains are normal if it is necessary to hasten delivery, as after reposition of the cord or small parts, or in placenta prævia and after premature rupture of the membranes. In fever also it is advisable to hasten delivery, and pituglandol is therefore indicated. It is indicated in contracted pelvis of moderate degree in which spontaneous delivery is possible; also in threatened asphyxia in the third stage, and after delivery of the placenta to contract the uterus and prevent hæmorrhage. It is contra-indicated in cases of high blood-pressure and in rigidity of the soft parts, chiefly in primiparæ, and when the child is not in good condition. He finds that it may be given from one to twenty times without injury. It is promptly excreted and there is no cumulative effect.

Subcutaneous administration is easier and suffices in many cases, but where it is desirable to get rapid action intravenous injection is much to be preferred. For instance, in moderately contracted pelvis with the child in good condition, the quicker delivery may be of great value to the child. It is also preferable in cases of atony near the end of the second stage; for then the effect of the pituglandol also extends over the third stage. If pituglandol is used at all in cases of threatened or already existent asphyxia it should be given intravenously so as to deliver as quickly as possible. If injected slowly—0.5 to 0.75 minutes for each cubic centimeter—it never does any harm and produces results that cannot be obtained in any other way, even by subcutaneous administration of the same preparation. He thinks pituglandol should be given intravenously more commonly than it has been heretofore.

A. Goss.

Queisner: Simplification of Obstetrical Instrumentation (Zur Vereinfachung des geburtshilflichen Instrumentariums). Monatschr. f. Geburtsh u. Gynäk., 1914, xxxix, 700.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In order to dispense with perforators and cranioclasts, it is recommended that the scalp be fixed with bullet forceps and split throughout its extent with scissors; then both flaps should be drawn down with strong forceps and the skull opened along the sagittal suture with scissors. Both parietal bones are seized with forceps and drawn down, and then the brain usually empties out of itself. Sometimes it is necessary to place bullet forceps on the skull, and gradually moving them higher—as in vaginal myoma-extract the head. The advantages of the method are that the head is fixed more certainly and that the vagina is protected from injury by the flaps of scalp. The perforation of the aftercoming head is similarly done. RUHEMANN.

# GENITO-URINARY SURGERY

#### KIDNEY AND URETER

Crowe, S. J., and Wislocki, G. B.: Experimental Observations on the Suprarenal Glands, with Especial Reference to the Function of Their Internal Portions. Bull. Johns Hopkins Hosp., 1914, xxv, 287. By Surg., Gynec. & Obst.

The review of the literature which precedes the report of the authors' painstaking and elaborate experimentation on dogs shows how little is positively known of the physiological function of the suprarenal bodies. As a result of their experiences,

they report as follows:

I. The effect of total removal of both suprarenals is fatal in the dog, regardless of age or sex. No difference was noted in the ultimately fatal result whether the glands were removed at one time or whether there was a gradual depletion by successive operations at intervals of weeks or months. It seems evident that there are no other bodies which are able to take up the function of the adrenals, when the last remaining fragment of these glands is removed. It has been stated, however, that total extirpation is not fatal in pregnant animals, the function of the cortex being taken up by the cells of the corpus luteum. The authors have not as yet investigated this point. After an "almost total" removal of both adrenals, the animals often have general convulsive seizures, subnormal temperature, and other symptoms of acute adrenal insufficiency, gradually returning to normal. The symptoms following total removal resemble in some respects those produced by total hypophysectomy-loss of weight, muscular weakness, and a striking and gradually increasing drowsiness. In several of the animals experimented upon, there were convulsive seizures preceding death.

2. The effect of the removal of the right or left adrenal alone was that after the removal of one adrenal, a transient glycosuria appeared within a few minutes and lasted from four to twenty-four hours. No acute manifestations of adrenal insufficiency followed the removal of either the right or left adrenal alone; the remaining gland developed marked hypertrophy, and in a week or ten days was

double its original size.

3. In regard to the relative importance of the cortex and the medulla of the adrenals, the experiments of the authors seem to bear out the contention of Biedl that it is the cortex which is the

essential portion of the gland.

4. The authors conclude from their studies of the relation of the adrenals to carbohydrate metabolism that (1) a transient glycosuria follows any operative manipulation of the adrenals; (2) this glycosuria is probably not a result of direct stimulation mechanically of the sympathetic nerves in the neighborhood of the glands, nor is it due to an increased output of adrenalin from the medullary portion of the adrenal; (3) there is little or no permanent disturbance of carbohydrate metabolism in

animals with adrenal insufficiency.

5. Transplantation of the adrenals was undertaken that it might be possible to determine (1) whether a fragment of cortex alone will "take" if transplanted into the kidneys or into the abdominal wall; (2) whether such a graft will suffice to keep the animal alive after a total extirpation of both adrenals. It was found that following transplantation, normal-looking viable cells of the cortex were found microscopically in several instances. The majority of grafts, however, undergo degenerative changes, being eventually replaced by scar tissue. Even when large fragments are transplanted the cortical cells may survive, but the chromaffin elements entirely disappear. As regards the second point, in one animal experimented upon, adrenal insufficiency and death supervened 24 hours after the removal of the last third of the remaining gland, the engrafted portion being found, after the death of the animal, to be inclosed in scar tissue but well vascularized. Only isolated groups of adrenal cells were seen microscopically, all containing lipoid and being of the cortical rather than of the medullary type. The explanation is that the engrafted portion had been deprived of its nerve supply.

6. In regard to the possible relation between the suprarenal bodies, the thymus, and the lymphatic system, an interesting combination of status thymicolymphaticus in association with other changes is seen in Addison's disease. Changes in the thymus (atrophic) with enlargement of the mesenteric, retroperitoneal, and mediastinal glands were noted in one case of removal of the adrenals. Enlargement of the lymph-glands occurred regularly in several cases. The findings in the thymus were not so regular, but not infrequently there was hyperplasia of this organ. Suggestive enlargement of the spleen and of the tonsils were found in one case of an animal with adrenal insufficiency of four and one-

half months' duration.

Further investigation is being made by the authors to confirm their findings.

A. Nelken.

Lockwood, C. B.: The Surgical Treatment of Nephroptosis by Occlusion of the Perinephric Fascial Sac. Brit. M. J., 1914, ii, 565. By Surg., Gynec. & Obst.

Lockwood considers occlusion of the loose and too capacious perinephric sac as the most important

factor in preventing recurrence of nephroptosis. His operative technique is as follows: Oblique incision about one inch below the twelfth rib from the outer border of the erector spinæ 4 to 5 inches forward. The muscles are split in the direction of their fibers, no nerves being divided. After opening the fascia transversalis, the finding of the kidney is facilitated by rolling the patient over until the wound faces the table. After the perinephric fascia is separated from the colon and peritoneum, it is taken between the finger and thumb at the lower end of the kidney, which is squeezed upward within its sac until its lower pole is level with the twelfth The fascia is then clamped off at its lower end, and 2 or 3 ligatures of No. 2 or 3 silk are passed around it. The ends of these ligatures are left long and used to fix the perinephric fascia to the abdominal wall. Unless it is necessary to explore the kidney for deposits, the sac of the perinephric fascia should not be opened. The operation is completed by bringing the abdominal muscles together with chromic gut sutures and suturing the skin with silkworm gut.

The operation can easily be performed in half an hour; it contrasts favorably as regards shock, pain, vomiting, etc., with the usual operations for nephrofixation. After the operation the patient remains three weeks in bed, three weeks on the

couch, and six weeks at gentle exercise.

In conclusion, the author cites a number of cases of nephroptosis with complications-calculus, hydronephrosis through kinking of the ureter, etc.in which permanent cures were obtained through the above-described operation. M. KROTOSZYNER.

#### Barrington, F. J. F.: Case of Suppurative Colinephritis. Brit. J. Surg., 1914, ii, 260. By Surg., Gynec. & Obst.

The patient was a female, aged 29, who four years previously while being treated for a chest condition developed a pain in the right renal region with frequency of urination and pyuria. She recovered from these symptoms in about two weeks, but a second attack suddenly began about ten days prior to examination, followed in three days with a pain in the right loin and chills and fever. was a great amount of pus in the urine. Bacillus coli were found in the cultures, but there was no blood; the temperature was 105°; pulse 112; the right side of the abdomen was rigid and tender; the right kidney was very large and easily palpable. Cystoscopy showed a much inflamed bladder; there were no spurts of urine from the right side; the left kidney was normal.

At operation the right kidney was exposed. There was no cedema of the surrounding fat; the kidney was easily delivered and was about one and one-half normal size. The surface was purple and through the capsule many yellow dots could be seen. Nephrectomy was done and cultures from subcapsular abscesses showed pure bacillus coli infection. The patient continued to have a fever

for about twelve days, when it disappeared and did not recur.

The wound healed completely in three weeks; the urine still showed bacillus coli on culture. The kidney when split showed many yellowish streaks surrounded by a dark-red somewhat raised zone. which extended from the papillæ to the surface, where they formed the yellowish dots. These areas were wedge-shaped with their bases at the cortex; the tissue between was normal. Stained sections showed a large part of the renal tissue to be normal. In the areas adjacent to the yellow streaks were dilated vessels, and the tubules were filled with coagulum containing a few pus-cells, chiefly poly-There was some extravasation in the nuclears. interstitial tissue. Sections from the streak showed the interstitial tissue densely infiltrated with round cells, and in the tubular casts were more cells. Sections from the middle of the streak showed the interstitial tissue replaced by cells with a few areas of necrosis. The glomeruli were little affected. In the coagulum in the glomerular spaces were a few cells with no desquamation of the glomeruli or tubular epithelium. A few areas showed groups of bacillus coli. The ureters and calyces were normal. The author calls particular attention (1) to the definite history of a previous attack less severe in degree than the present one, (2) present onset with acute attack of bladder trouble, and (3) the absence of œdema of the perirenal fat.

G. J. THOMAS.

## Widal: The Means of Testing the Renal Function. Med. Press & Circ., 1914, cxlix, 375.

By Surg., Gynec. & Obst.

The author briefly outlines the methods employed by him in determining the state of the kidney function, which depends upon three factors: bloodpressure, the degree of nitrogen retention, and the degree of chloride retention. The blood-pressure records indicate the part the vascular system is playing in the course of the nephritis.

Azotæmia is studied by a direct estimation of the urea in the blood. Widal uses the modified method of Yvon—sodium hypobromite. When the urea is below 0.5 gram to the liter there is no nitrogenous retention; when between this and I gram the prognosis is not immediately fatal; but when it is between I and 2 grams it is rare for the subject to survive for more than a year. The course is still more rapid when the ratio is between 2 and 3 grams; it is then a question merely of months, perhaps weeks. Figures above 3 grams are met with only in the ultimate stages of the disease, and when met with indicate a fatal termination in the immediate

Chloruræmia is usually indicated by the presence or absence of ædema. However, when ædema is absent, there may be chloride disturbance and this may be ascertained by one of two tests, the alimen-The former tary salt test and daily weighing. consists in the determination of chloride equilibrium

by daily salt intake and salt output determinations and is valueless unless carried out for several days. The latter is a very simple method when the chloride content of the diet is known and consists in getting the weight of the patient daily at a regular time, usually in the morning before breakfast, after emptying of the bladder and bowels; a gain in weight of one pound indicates the retention of 5 to 6 grams of salt.

Frank Hinman.

Walther, H. W. E.: A Simplified Apparatus for Performing Pyelography. Am. J. Surg., 1914, xxviii, 398. By Surg., Gynec. & Obst.

The author attempts to point out the best and safest method for doing pyelography. He lays great stress upon the gravity method of employing collargol and solutions of similar opaque substances, and believes that this method should be the one of preference. He condemns the syringe method of making pyelograms as being extremely dangerous

and unsurgical.

He believes that the apparatus he has devised is an improvement over similar forms of apparatus heretofore recommended for doing pyelography by the gravity method. His apparatus consists of a metal frame shaped in the form of an inverted T, the arms of the lower part of the frame being fitted with U-shaped clamps which are made to hold two 50-ccm. burettes. The burettes he uses are improvisations, being originally the barrels of two 50-ccm. Triumph syringes. These cylinders are marked in gradations of cubic centimeters from 1 to 50, so that the actual capacity of the kidney pelvis and ureter can be ascertained. Attached to the lower end of each burette is a piece of rubber tubing of small caliber, 3 feet long, and to the distal end of the tubing is attached the small metal, funnelshaped ureter catheter tips with stop-cock combined. These tips are of such size as to fit any ureteral catheter and the corrugations or threads which encircle these tips possess the added advantage of grasping the catheter firmly when the two are connected.

The advantages of this form of gravity apparatus

- r. The ease with which it can be manipulated.
- 2. The convenience of its supporting frame, which can be hung on the wall beside the operator or can be held in one hand by an assistant.
- 3. The facility with which it can be taken apart for cleansing or sterilizing.
  - 4. Its compactness and its portability.
  - 5. The moderate cost of such an outfit.

# Krotoszyner, M.: Untoward Results of Pyelography. Surg., Gynec. & Obst., 1914, xix, 522. By Surg., Gynec. & Obst.

Not all problems of renal pathology can be solved by the clinical picture, cystoscopy, examination of separate urines, and renal function analyses, especially those cases not characterized by an appreciable deterioration of renal function. These require a demonstration of their anatomical abnormality. This is furnished by pyelography. It has been extensively used. Some clinicians consider it dangerous; the majority of observers disagree with this. That it may be accompanied by some untoward symptoms is shown by a citation of cases.

A male, 36 years old, had had a right-sided abdominal pain for several years, and his urine contained pus and blood. The function of the right kidney deteriorated. Operation three days after pyelography showed a number of necrotic and hæmorrhagic areas colored with silver; there was also silver in the tubules.

Similar lesions are reported by others, as well as two fatal cases, one occurring in the author's own

service.

Milder symptoms observed had been pain, temperature, nausea, and vomiting. It is not advisable to use morphine before injecting, as pain

is a valuable index of too much pressure.

In a number of nephrectomies made by the author no trace of silver salts, injected a few days previously, could be found. In many cases where operation is indicated by other findings, pyelography suggests the choice of procedure. It aids in detecting ureteral abnormalities and the relations of kidney pelvis and ureter to surrounding organs. The technique must be further studied to detect just what is the factor responsible for the bad results. For the present it should be restricted to those comparatively rare cases in which the correct recognition of a renal lesion by a combination of all other exact methods of examination is impossible.

Buerger, L.: Concerning Renal Lesions after Pyelography. Surg., Gynec. & Obst., 1914, xix, 536. By Surg., Gynec. & Obst.

Buerger pointed out in 1911 that collargol when injected into the pelvis of the kidney for purposes of pyelography may penetrate far into the parenchyma. He now reports his case in full, together with an additional one in which 40 per cent argyrol caused necrosis of the renal parenchyma. In the first case, 12 ccm. of a 10 per cent solution of collargol were carefully injected to determine the nature and extent of a stenotic ureteral lesion following ureterotomy for calculus. Although no untoward symptoms referable to the injection were noted, the extirpated kidney presented wedgelike areas of collargol infiltration extending to the surface of the organ. In some of these, purulent foci and necrosis were found.

In a second case of hydronephrosis demonstrated in the pyelogram by the injection of 20 ccm. of 40 per cent argyrol, quite a severe local and general reaction supervened, and marked evidence of extensive necrosis of the parenchyma with infiltration with argyrol was demonstrated in microscopic sections.

The histological examination of the material from both cases showed that the silver salts may

ascend the tubules, and cause coagulation necrosis, hæmorrhage, and probably secondary purulent infection.

Although the invasion of the renal parenchyma by the silver salts was apparently not dangerous to life in either case, and although the appearance of the kidney in the first case and the clinical course in the second speak for the probability of recovery from the necrotic lesion, nevertheless the circumstance is sufficiently grave to warrant careful analysis in order to avoid, if possible, the occurrence in the future. It seems unlikely that the infiltration is directly due to the technique, but that the ascent of the salts is favored by other factors. The most important of these are obstructions to the outflow and secondary colic, which is often accompanied by contractions of the renal pelvis and reflex into the parenchyma. The reason for the necrosis must be sought in the action of the salts in a congested organ in which hæmorrhage may have been induced by infection. Purulent foci may be the result of infection carried upward by the ascending fluid.

Basham, D. W.: Report of a Case of Post-Operative Anuria Occurring on the Twelfth Day Following Nephrectomy for Hypernephroma. Tr. West. Surg. Ass., Denver, 1914, Dec.

By Surg., Gynec. & Obst.

That anuria may follow certain surgical operations is a well-known fact. The gravity of the operation appears to be of less importance as a determining factor in the causation of suppression of the urine than the structures concerned in the operation; for example, complete suppression of the urine has so often followed the use of the catheter for the relief of-a greatly distended bladder that surgeons of former times were wont to caution their pupils against the practice of completely evacuating the bladder at the first sitting.

Unskillful and maladroit instrumentation is more likely to be followed by suppression of the urine than when the manipulations are carried out with true surgical skill. Even in some of the cases of major operations where convalescence has been interrupted by the occurrence of anuria it has sometimes been thought that the way in which the tissues were manipulated during the course of the operation may have been partly responsible for the unfortunate complication; for example, when nephrectomy or some other operation upon the kidney has been followed by complete cessation of the renal functionment the occurrence has been attributed to traumatism of the healthy organ by the roll or sandbag used on the operating table impinging the kidney against the vertebral column. This looks like an improbable accident but there may be some instances where it occurs.

Any operation followed by shock may cause oliguria or even anuria. The operations, however, which are oftenest complicated by post-operative urinary suppression are operations upon the urogenital system. The ligature method for the cure of

hæmorrhoids and the operation of appendectomy are among the procedures which have sometimes given rise to anuria. In some instances an unrecognized acute nephritis may have played an important rôle in the case. When anuria is due to surgical shock it usually follows the operation immediately; in fact, a marked oliguria is not an infrequent sequel during the first twenty or fortyeight hours after a major pelvic operation.

The frequency of this post-operative phenomenon has been remarkably diminished since the practice of hypodermo- and proctoclysis with normal

salines has become almost universal.

The case of post-operative anuria cited by the author is, in his opinion, fraught with much more than ordinary interest. The cessation of the urinary function did not take place immediately after the operation but was delayed almost a fortnight and continued unmitigated for an equal period of time.

The patient, aged 28 years, came under the author's observation July 25, 1913. She is married, and is the mother of two children. Both her parents are living and in good health. Both maternal grandparents are still living and in good health. The grandfather is 87 and the grandmother is 80 years old. No very definite information could be elicited concerning the grandparents on the paternal side save that they both died at a very advanced age. The patient has two brothers and two sisters all living and in good health. She menstruated first at the age of 12. Her periods were always regular and free from pain until about three months prior to examination, when she began to suffer greatly at each menstrual period. The earliest clinical manifestations which can be associated with the immediate history of her disease was a severe and persistent pain in the back which was first observed in September, 1912. For this she sought the advice of her family physician, who made a diagnosis of lumbago and treated the case without success. She continued to suffer and in April, 1913, developed an infection of the upper part of the left popliteal region terminating in an abscess which was treated by her regular medical attendant with success. A month later she began to suffer severely with pain situated in the region of the right kidney with tenderness in front and medianward. This attack continued for a week. About four weeks later there was a recurrence of the painful condition lasting nearly a month. Two weeks latter there was another recurrence, each succeeding attack having been more severe than the one preceding.

When the patient came under the author's observation the kidney could be palpated as a very sensitive mass in the right upper quadrant of the abdomen. The mass extended well toward the median line. There were almost no abnormal urinary findings; notwithstanding bimanual palpation with the finger tips of the left hand in the right costovertebral angle of the twelfth rib and

those of the right hand over the anterior and inner aspect of the tumor mass demonstrated that the neoplasm was in all probability continuous with the kidney. The ankles and knees were swollen and painful, and in a lesser degree the wrist- and elbow-joints. There was a bright red maculoid eruption which faded away into brownish blotches covering the inferior extremities which resembled Henoch's purpura. Neither the articular nor the cutaneous manifestations are regarded as bearing any important relation to the renal neoplasm or the anuria that followed its removal, but they coexisted and therefore must be recognized.

The patient had become emaciated and much reduced in strength. When admitted to the hospital the matinal temperature was 99.8°, vespral temperature 100°; pulse 90; leucocytes 8,000; the urine was alkaline and free from albumin, sugar, casts, pus, bile, bacteria, and blood; quantity near normal. The X-ray failed to give any definite information further than to show a large shadow of the kidney. Gall-bladder trouble was excluded because of the absence of the usual syndrome accompanying disease of the biliary passages. A neoplasm of the cæcum or ascending colon was likewise excluded because of too little disturbance in the intestinal functions, absence of blood in the alvine dejectæ, and signs of obstruction. Stone in the kidney was excluded on account of negative urinary findings and failure of X-ray pictures to disclose anything.

Tuberculosis of the kidney was considered but excluded for lack of positive urinary findings, and it was thought that the elevation of temperature and perhaps the acceleration of the pulse were attributable to the articular manifestations.

With the tentative diagnosis of renal neoplasm, the patient was prepared for operation by the administration of aperient agents, a dietary of liquids including plenty of water, cereals, and vegetables, and baths to place the cutaneous system in a favorable condition.

At operation, August 2, 1913, under ether-oxygen anæsthesia an exploratory incision was made over the left kidney for the purpose of palpating and inspecting that organ. The left kidney being apparently normal the exploratory wound was closed. The patient was then placed in the position for right lumbar nephrectomy. The operation was accomplished with some difficulty on account of the density of the adhesions encountered. Fortunately the strongest adhesions were between the posterior surface of the kidney and lumbar structures, the tissues being fused so as to obliterate the different layers. The tumor had apparently propagated itself through the capsule and encroached upon the adjacent structures in the loin. It was necessary to remove considerable muscle and fascia in order to enhance the patient's chances for prolonged or permanent immunity; for the same reason the pedicle was made as short as consistent with safety. The neoplasm was situated in the cortical portion

of the kidney. This may account for the absence of abnormal urinary findings. The specimen was sent to the laboratory of the hospital and was reported upon as a malignant hypernephroma.

The patient came out of the operation in very good condition and her convalescence was satisfactory until the twelfth day. The urine was voided several times a day and the quantity was sufficient.

Twelve days after the operation the patient had a molimina menstruale attended with considerable pain and only a scanty flow. The renal functionment was suddenly suspended, no urine whatsoever being voided. The next day, after the administration of café noir per rectum the nurse with the aid of the catheter was able to obtain almost half an ounce of dreggy fluid from the bladder. Later, the catheter was employed again and but a single drachm of dirty-looking fluid was brought away. One-sixth grain of pilocarpine hydrochlorate was caused to be administered hypodermatically. This was soon followed by an almost incredibly profuse diaphoresis.

The wound being healed the patient was placed in a hot bath once a day as an additional means of stimulating cutaneous transpiration. After being placed in bed and given a dose of the pilocarpine salt hypodermatically prompt and profuse sudation always followed. The nourishment was limited to There were no marked uræmic manifestations exhibited at any time, notwithstanding the facial expression showed a certain amount of anxiety after the first three or four days. Hysterical phenomena were not observed at any time. On August 24 a few drachms of dark, muddy albuminous urine were voided. On August 25, eleven days after the onset of the anuria, seventyfive ounces of urine were voided. The daily quantity of urine from this date on remained between forty and fifty ounces, and further convalescence was uninterrupted. Sixteen months after operation the patient is still feeling well.

Bickersteth, R. A.: Kinked Ureter. Proc. Roy. Soc. Med., 1914, vii, Surg. Sect., 259.

By Surg., Gynec. & Obst.

The author has collected a considerable number of cases of hydronephrotic and pyonephrotic kidneys. By making them water tight and distending them it was possible to see where the obstruction had been.

In order to determine if possible the origin of distended pelves the first class of cases considered are hydronephrotic, due to kinked ureter. These the author divides into three classes:

1. Those with enormously dilated, soft, thin-walled pelves.

2. Cases in which the body of the kidney is canoe-shaped.

3. Cases in which the ureter starts at the lowest part of the pelvis and runs upward for some distance, thus acting as a siphon.

In a good many cases the ureter is kinked over an abnormal renal artery. This is very difficult to

demonstrate on a cadaver or on the operated speci-

The author recommends pyelography as of advantage in these cases from a diagnostic standpoint. In conclusion he calls attention to a very striking difference which appears to exist between these cases of hydronephrosis from kinked ureter and the large pyonephrotic tumors dependent upon renal calculi. In the former cases, as just described, the great bulk of these enormous tumors is in the main made up by dilatation of the original renal pelvis, the kidney itself participating in the enlargement only to a lesser degree.

In nearly all the larger pyonephrotic tumors depending upon renal calculi, the renal pelvis as such has practically ceased to exist: these kidneys have a contracted and cicatricial pelvis formed of dense fibrous tissue everywhere closely surrounding the stone and apparently contracting upon it. The great bulk of the tumor is made up of the enormously dilated calices enclosed by the stretched and thinned-out renal cortex. A. C. STOKES.

Thomas, W. T.: Ureteral Calculi. Proc. Roy. Soc. Med., 1914, vii, Surg. Sect., 279.

By Surg., Gynec. & Obst.

Thomas reports twenty cases on which he operated. He classifies the symptoms in the order of their frequency as follows:

Dull pain in the groin, renal colic in 13 cases; hæmaturia and pyuria in 4 cases; hæmaturia alone in 6 cases; pyuria in 5 cases; and 3 cases had neither hæmaturia nor pyuria. In one case the symptoms directed him to the wrong side.

In the ureter and kidney with the exception of 1.5 inches at the lower end of the ureter the X-ray evidence is sufficient for diagnosis. In the remaining portion of the kidney and ureter a cystoscope and ureteral catheter should locate the stone.

In only two cases did the author find it necessary

to pass a special ureteral bougie.

In investigations in the London University to ascertain the chemical production of stone in the kidney not a single one was found to be composed of uric acid; they all consisted largely of calcium oxalates and phosphates with a small per cent of urates.

The positions of the stones in the twenty cases alluded to are as follows: 8 cases were outside of the bladder wall; I in the bladder wall; I in the prolapsed ureter within the bladder; 3 two inches above the bladder; I at the lower level of the sacro-iliac joint; I in front of the sacro-iliac joint; I opposite the fourth lumbar transverse process; I blocked the commencement of the ureter; 2 had multiple stones, and I had a large portion of the ureter filled with calcareous sediment.

The treatment is operative, except when the stone can be reached with the cystoscope. A skiagram should be made just before the operation. Thomas uses the muscle-splitting apparatus to get to the ureter in some parts. A. C. STOKES.

#### BLADDER, URETHRA, AND PENIS

Graeupner: Vesical Calculus (Blasenstein). Monatschr. f. Geburtsh. u. Gynäk., 1914, xxxix, 698. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

After a vaginal fixation a vesicovaginal fistula developed, which was sometimes closed in a valvelike way by a stone. Colpocystotomy was performed, the stone removed, the wound sutured, and a permanent catheter inserted. The very hard stone had a silk suture as a nucleus. The author warns against the use of silk sutures in vaginal operations. RUHEMANN.

Fuller, E.: The Surgical Management of Pericystitis. Med. Rec., 1914, lxxxvi, 573.

By Surg., Gynec. & Obst.

Fuller emphasizes early seminal vesiculotomy in cases of pericystitis due to infected vesicles. Cases of cystitis secondary to seminal vesiculitis have cleared up remarkably well under operative

The clinical symptoms of pericystitis vary a great deal. The diagnosis is based upon the rectal examination and cystoscopy. On palpation the vesicles are found enlarged and tender and may be bound down by adhesions. Cystoscopy shows a congested trigone, or it may even include the vertex creating a panyesical lesion. A greatly contracted bladder is not infrequently found; on the other hand. pericystitis may originate from within the bladder due to tuberculosis, trauma, neoplasms, etc.

The author earnestly protests against the three favorite methods of treating pericystitis due to infected vesicles. Bladder irrigation with either stimulating or soothing irrigations, surgical bladder drainage, either perineal or suprapubic, and, as a last resort, prostatectomy, are all strongly condemned. After these treatments the patient invariably is left in a much poorer condition.

Three case histories of pericystitis are presented, in which gonorrhea was the exciting cause, followed by seminal vesiculitis. The examinations disclosed infected and adherent vesicles, contracted and inflamed bladders; in the third case a renal lesion was found secondary to the pericystitis. In all three the seminal vesicles were drained with very gratifying results. The second and third patients had been referred for prostatectomy and nephrectomy, respectively. C. D. PICKRELL.

Robitshek, E. C.: Primary Tumors of the Bladder in Children; Report of a Case of Fibrous Polypus. St. Paul M. J., 1914, xvi, 580. By Surg., Gynec. & Obst.

In connection with his report of a case of fibrous polypus of the bladder of a child, Robitshek reviews the literature and discusses the etiology, symptomatology, diagnosis, and treatment. A lengthy bibliography accompanies the report.

The case was that of a male child, aged four and one-half years, who complained of inability to urinate. He had been perfectly well until six or eight months before, when the mother first noticed difficulty in urination, which was thought at first to be due to habit. There would be a sudden desire to urinate, later attended by straining, at

times with increasing pain.

Recently he had had sudden complete retention, which was relieved only by a catheter. This treatment was followed by spontaneous urination for a few days, when dysuria and straining gradually increased, followed by retention, catheterization, and relief again for a few days. At no time was blood discovered in the urine. While under observation retention again occurred, which was relieved by a retention catheter for a few days.

Examination showed a perfectly healthy child except for the urinary disturbance. Bimanual examination was negative. No stone could be felt with the sound or could be discovered with X-rays.

A child's cystoscope was not available.

Suprapubic cystotomy disclosed a pedunculated growth 2.5 x 1 cm. situated in front of the urethral opening. This was removed by actual cautery.

The pathological diagnosis was telangiectatic fibrous polyp. H. A. FOWLER.

#### Cooper, J. M.: Stricture of the Male Urethra. Southwest J. M. & S., 1914, xxii, 606.

By Surg., Gynec. & Obst.

Cooper speaks against too precipitate operative treatment of stricture and recommends assiduous and careful gradual dilatation. The advantages of preliminary meatotomy when indicated is urged, and the routine examination with olive-tip bougies advocated. He reports stricture as having caused symptoms variously interpreted as those of sciatica, lumbago, etc. J. S. EISENSTAEDT

# Wolbarst, A. L.: The Colliculus Seminalis Considered as a Factor in Chronic Disease of the Male Urethra. Am. J. Surg., 1914, xviii, 369. By Surg., Gynec. & Obst.

The author presents 3 interesting cases of recent date, all of which presented the single complaint sterility due to azoöspermia — without any history or evidence of gonorrhœa or of epididymitis. patients were strong, young healthy married men, one of them stout, the others of normal weight. The sexual function was in no sense disturbed, and the prostate, seminal vesicles, and external organs were apparently normal. Examination of the fresh seminal secretion showed an utter absence of spermatozoa. However, the examination of the posterior urethra showed the following striking conditions:

In the first case the colliculus was highly congested, the anterior aspect deep red, like a fiery ball; from its upper surface emerged five bands of fibrous tissue, which extended backward along the floor of the prostatic fascia toward the vesical neck. At first sight these bands gave the impression of a trabeculated bladder, with the difference that there was no crossing of the bands, all of them radiating outward like an opened fan. The ejaculatory ducts could not be discerned.

In the second case there was very highly inflamed colliculus, the base deep red, streaked with white and gray, and bleeding easily when touched with a probe or cotton carrier. From its anterior surface a cauliflower like polyp arose, behind which could be seen the outlines of a large cystic mass. No ejaculatory ducts could be found.

In the third case there was a large deformed colliculus, utterly obscured by innumerable large and small cysts; total cystic degeneration; when punctured some of these bodies gave forth a creamy white cheesy substance, which dissolved readily in the irrigating fluid. The ejaculatory ducts were not

visible.

The treatment of colliculitis and the technique pertaining thereto is practically new and the methods are still in an embryonic state. Enough has already been accomplished, however, to warrant the statement that with the aid of a suitable posterior urethroscope and sufficient experience on the part of the operator, striking results are obtained in the alleviation of chronic conditions that have heretofore been considered almost hopeless.

H. A. MOORE.

#### Hawkins, J. A.: Present Status of the Verumontanum in Deep Urethral Diseases. N. Y. M. J., By Surg., Gynec. & Obst. 1914, c, 709.

Fourteen years ago the author treated his first patient for inflammation of the verumontanum, and he is convinced that the verymontanum is the seat of nearly all, if not all, the genito-urinary neu-

The use of the straight tube in the examination or treatment of the verumontanum is not to be compared with the curved tube of Leiter, into the fenestrum of which the verumontanum "bobs like an erect clitoris." It is well to remember that any number of pseudoverumontanums may bob up in the fenestrum as the tube is withdrawn if care is not taken, owing to the bulging mucosa on the floor. This can be rectified by changing the position of the tube slightly.

The use of the solid stick of silver has, when used by the author, produced no better results than a 15 to 20 per cent solution of the nitrate, and on several occasions patients have suffered severely.

In addition to the use of nitrate of silver solution of 15 to 20 or even 50 per cent, and the use of the punch recommended by Gardner the verumontanum may be attacked through the Wappler cystoscope with the high-frequency unipolar spark of Oudin. This, the author thinks, is the neatest and most artistic method of diminishing an enlarged succulent verumontanum and it is not followed by bleeding.

As to the prognosis in these cases, the author states that if any good is to result, the inflammation should begin to subside after three or four treatments at ten-day intervals. When the inflamma-

tion once begins to abate, the cure is usually rapid, and if the patient has not recovered from the urethral trouble in three months little more can be done. The symptoms of hypochondriasis begin to disappear when, or even before, the urethral lesions show improvement. Tonics, baths, change of scene, and all methods to cheer up the patient and get his mind off himself and his illness will assist greatly. These are all chronic cases and require chronic treatment in which patience and tact play most important parts. H. A. MOORE.

# Foster, G. S.: An Interesting Case of Hermaphroditism. N. Y. M. J., 1914, c, 560. By Surg., Gynec. & Obst.

The author reports a case of hermaphroditism which presents some unique features. The patient, 27 years of age, was next to the oldest of a family of ten children—none of the others being similarly formed. At seven she began having epileptic attacks, which recurred weekly up to the tenth year, when menstruation became established, following which the epileptic attacks became more frequent and severe. These attacks continued with some irregularity and were followed by weakness and prostration.

Mental development had not progressed normally since the patient's seventh year. Her features, voice, skin, eyebrows, hair, shoulders, chest, arms, forearms, and hands were masculine. The mammary glands were not well developed, the abdominal wall was muscular, the thighs were large, and the pelvis broad and flaring. The labia were of normal conformation and size. Where the clitoris is normally located, was suspended a fully developed penis such as would be normal in a boy 8 or 10 years of The vagina would admit two fingers.

hymen was intact.

Under ether the vagina was found to be shallow and infantile. There was no cervix uteri. The os was merely an aperture in the vault of the vagina which seemed to pierce an area of thickened tissue. On bimanual examination an oval mass was found to occupy the place of the uterus. The tubes and ovaries were not well palpated. Operation was decided upon for the possible influence on the economy. The clitoris, or penis, was resected and the base made flat by suturing, and following this a suprapubic panhysterectomy was done. A globular mass about the size of a peach was found in place of the uterus. The tubes were normal in size, length, and form. The left ovary, which was the size of a hen's egg, bore multiple cysts. The right ovary was normal in size and consistence. Attached to it was a firm, pearly white mass the size of a walnut, which when incised revealed a structure resembling testicular tissue. Microscopic examination confirmed the existence of a testicle well formed and

Recovery from operation was uneventful. The epileptic attacks continued but became less frequent

and severe.

The author calls attention to the extraordinary condition in this case of the existence of a testicle in close proximity to the right ovary. H. G. HAMER.

# Hart, D. B.: On the Atypical Male and Female Sex-Ensemble—So-Called Hermaphroditism and Pseudohermaphroditism. Edinb. M. J., 1914, xiii, 295. By Surg., Gynec. & Obst.

The author defines the criterion of sex as the presence of the sex gland. Abnormal development of the opposite sex-duct elements cannot be regarded as evidence of sex at all. They are only valuable in classifying the sex-ensemble as typical or atypical.

In typical and atypical sex-ensemble cases the

sex is either male or female.

The author classifies typical female and male

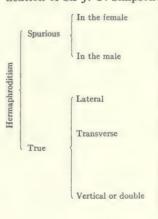
sexual characteristics as follows:

1. The typical female sex-ensemble is made up of (a) the ovary; (b) the potent sex-duct tracttubes, uterus, vagina, and external genitals; (c) the opposite sex-duct elements-epoöphoron, degenerated equivalent of the epididymis of the male: (d) the secondary and congruent sexual charactershair distribution, pelvis, body form, vocal cords, ossification of thyroid cartilages (incomplete), and the psychosexual feeling for the male; mentality less strong than in male.

The typical male sex-ensemble comprises: (a) descended testes; (b) vas deferens and phallus—the potent organs; (c) the opposite sex-duct elements-hydatid testis and prostatic utricle; (d) the secondary sexual characters-hair distribution, pelvis, body form, vocal cords, ossification of thyroid cartilages (complete), and the psychosexual feeling for the female; mentality stronger than

in female.

The author then gives various classifications of hermaphroditism. We will submit only the classification of Sir J. Y. Simpson:



From excessive development of the clitoris, etc From prolapsus of the uterus. From extroversion of the urinary bladder. From adhesion of the penis to the scrotum.

From hypospadic fissure of the urethra, etc.

Testis on the right and ovary on the left side. Testis on the left and ovary on the right side.

External sexual organs fe-male, internal male. External sexual organs male, internal female.

Ovaries and an imperfect uterus with male vesiculæ seminales and rudiments of

vasa deferentia.
Testicles, vasa deferentia and vesiculæ seminales with an imperfect female uterus and its appendages.

Ovaries and testicles coexisting on one or both

sides.

Several cases are enumerated and the author gives some excellent examples of sex-ensemble in both male and female, and discusses at length variations in sex-ensemble and the possibility of early diagnosis of the same. He says in atypical female sex-ensemble the diagnosis is difficult if not impossible in the infant. In the adult the presence of the prostate and of the hypospadias misleads and, in Febiger's case, the real diagnosis was impossible.

In atypical male sex-ensemble the diagnosis is easier, especially if the testes are in the demiscrotum.

Homosexuality, he says, is illustrated in Febiger's Case II, and also by Tuffier and Lapointe's cases, its cause evidently being the opposite psychosexuality present. The case was, therefore, a victim of organization and not a depraved personality, as may sometimes be the case.

1. The atypical or pseudohermaphroditic sexensemble case is either male or female, and this

is judged by the nature of the sex gland.

2. The potent, non-potent, and secondary sexual characters are not in the maximum-minimum ratio with congruence of the secondary sexual characters.

3. The non-potent in atypical sex-ensemble cases are thus increased and the congruence of the second-

ary sexual characters is disturbed.

4. It is to be specially noted that in the atypical female cases a prostate with lateral lobes only (Febiger's Cases I and II), or with all the lobes (Febiger's Case III, an infant of six weeks), may be present.

5. In the atypical female cases the suprarenals are enlarged in all the accurately recorded cases (Febiger's and Fraser and Dickson's), but the bearing of this in such cases is not accurately known.

6. In male atypical cases part of the lower urinogenital sinus may be present, and may thus simulate an imperfect vagina; sometimes a hymen is present, and in Martin's case the external genitals and vaginal entrance resembled those of a female in every detail.

7. Certain atypical male and female sex-ensemble cases may be "inverted" both in sexual

feeling and in mentality.

8. In atypical male sex-ensemble cases the testes may be pelvic in the groin or completely descended into the two halves of the scrotum (Tuffier and Lapointe, Neugebauer, and Martin).

o. In certain atypical male cases the sexual instinct may be doubly exercised. A. C. STOKES.

#### GENITAL ORGANS

# Morris, R. T.: Heteroplastic Grafting of Testicle. N. Y. M. J., 1914, c, 753. By Surg., Gynec. & Obst.

Prompted by the recent work of grafting of the testicle by Lydston, Morris reports a case of a man 49 years of age, who, as the result of being thrown by a bucking horse upon the pommel of a Mexican saddle, had both testicles crushed and they had to be subsequently removed by operation. Shortly afterward, all characteristic masculine cœnæsthesia was lost and the patient, a large strong man, became extremely nervous, with periods of great depression. Morris suggested the grafting of testicle, to which the patient consented. The necessary grafting material was obtained from a man 56 years old with a very large hernia who gave a negative von Pirquet and a negative Wassermann.

A wedge of tissue was taken from the testicle of the donor and cut into four slices each averaging 3 mm. in thickness and approximately the length of the testicle. One of these segments was engrafted into the right scrotum of Morris' patient, another one was placed beneath the fascial sheath of the right rectus abdominis, and the third segment placed beneath the sheath of the left rectus abdominis. A Wier's celluloid testicle was placed in the left scrotal sac. Within 48 hours from the time the grafting was done the patient was distinctly conscious of the effect of the internal secretion which he was absorbing from the grafts. At that time occured the first distention of the corpora cavernosa and corpus spongiosum that had occurred in ten The patient subsequently gained 14 pounds, was no longer known to be melancholy and despondent, and sexual activity was restored.

H. W. E. WALTHER.

# McArdle, J. S.: The Surgical Treatment of Hydrocele. Practitioner, Lond., 1914, xciii, 470. By Surg., Gynec. & Obst.

After studying the surgical procedures and outcome of the different varieties, McArdle established the fact that the open operation was the only reliable method of dealing with the various types of hydrocele. He recites the histories and reproduces some excellent pictures to demonstrate the different cases.

He says the palliative treatment is practically a thing of the past, Volkman's method as well as that of Juillard was followed by recurrences. Andrews's so-called "bottle operation" is simple and rapid, but unsuited in cases of long-standing trouble with thick-walled sacs; Jaboulay's method of extroversion is a very slow procedure, while in Longuet's method of eversion of the sac there is no gain either in time or in results. On the whole, he prefers the simple and effectual operation of resection (Bergmann).

The author contends that resection is the proper treatment for all hydroceles derived from the funicular process of the peritoneum, congenital, encysted of the cord, and the vaginal type. In the congenital form, ligation of the neck should precede

the resection.

When the cyst is in the rete testis, the tunica vaginalis is opened in front, the testicle turned on one side, and an incision made over the cyst at right angles to the long axis of the testicle; blunt dissection frees the entire cyst, or as much as is necessary for the success of the procedure. All hydroceles developed in the vasa efferentia or in Kobelt's tubes are best treated by this method, while the pedunculated ones require ligation of the pedicle with catgut, and removal with scissors. Complete excision can be accomplished, even when the hydroceles are multilocular. Louis Gross.

Bazy, M.: Trophic or Disintoxicating Action of Prostatectomy (De l'action trophique ou désintoxicante de prostatectomie). Bull. Acad. de mèd., Par., 1914, lxxi, 844. By Surg., Gynec. & Obst.

It is a mistake to call an operation for hypertrophy of the prostate a prostatectomy. The so-called prostatic hypertrophy is caused by the presence of adenomata which deform and obstruct the prostatic urethra and the meatus of the bladder. The operation consists in the removal of these adenomata and should be called prostatic adenomectomy. This is an important point, for an adenectomy leaves the glandular part of the prostate intact, and both its internal and external secretion is important.

The late results of this operation are complex. It renders the free emptying of the bladder possible and thereby overcomes all toxic effects from infection through the bladder, but this does not suffice to explain the improvement in general health which follows the operation. The author describes a case in point, in which constant drainage had been established and the bladder was disinfected every day, but still there was continuous albuminuria, ædema, and heart trouble which sometimes necessitated the use of digitalis. After a prostatic adenomectomy all these symptoms disappeared. It is difficult to explain this improvement, which was certainly not due to reëstablishing the free discharge of urine. It was probably due to scarcely perceptible bodily changes. In other cases constipation has disappeared, intestinal secretion has been improved, and normal intestinal contractions reestablished.

Bazy attributes his good results in a great measure to his after-treatment. At the close of the operation he tampons the cavity left after the removal of the adenomata around a large urethral sound; then he places in the bladder a large tube that comes out through the abdominal wound. The tampon is left in place 24 hours; then continuous irrigation is begun with warm salt solution. The solution is introduced drop by drop through the large bladder tube into the prostatic cavity and comes out through the urethral sound and is carried through a long rubber tube into a receptacle. After four days the tube is removed but the sound is left in place; the bladder is closed with a dressing drawn rather tightly. It is often possible to remove the sound after 12 days; sometimes it remains longer, but it is unusual for complete recovery to take longer than three weeks.

#### MISCELLANEOUS

Posner, C.: Cylinders and Cylindroids (Zylinder und Zylindroide). Ztschr. f. Urol., 1914, viii, 390.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

With dark field illumination it is possible to form a better judgment as to soft, transparent formations in the sediment. Along with the hyaline cylinders there are many irregular, very long, branched formations, called cylindroids, which frequently coexist with true cylinders. They are of diagnostic value in the beginning, in convalescence from acute nephritis, and in the so-called pretuberculous albuminuria. It must be taken into consideration that cylinder-like clots may come from the deeper parts of the urinary tract, but they can be recognized as such by their coexistence with elements from the prostate and seminal vesicles. Rubertius.

# SURGERY OF THE EYE AND EAR

EYE

Smith, H.: Treatment of the Earlier Stages of Senile Cataract. Ophth. Rec., 1914, xxii, 497. By Surg., Gynec. & Obst.

Smith believes that much can be done by treatment with cyanide of mercury injections in cases of immature cataract in certain stages. When there are definite reduction divisions in distant vision, an examination with the ophthalmoscope gives the impression that one is examining with a poor light, and yet there are no definite opacities of the lens; or when these are dust-like and arranged peripherally, then he considers this treatment indicated. Subconjunctival injections of cyanide of mercury of 1 to 4,000 or 6,000 are given; 25 minims are given usually with the patient under the influence of morphine. Definite improvement results within a month, and the lenses are, as a rule, entirely clear by the end of the third month. When there are definite opacities present, Smith unhesitatingly advocates extraction within the capsule.

Wood, H.: The Elliot Trephining Operation in the Surgical Treatment of Glaucoma. J. Tenn. St. M. Ass., 1914, vii, 240.

By Surg., Gynec. & Obst.

After a reference to von Graefe's iridectomy in the operative treatment of glaucoma the newer operations are discussed. The Lagrange operation marked an epoch in operations for glaucoma, in that Lagrange introduced the principle of sclerectomy or buttonholing the sclera by the removal of a piece of sclera at the corneoscleral junction. This opening in the sclera allows permanent subconjunctival drainage, and so reduces tension.

The Elliot operation is described. In this, after turning down a conjunctival flap, a circular disc I to 2 mm. in diameter is removed by a trephine from the corneoscleral junction opening by its deep end into the anterior chamber. A small peripheral iridectomy is done to prevent the iris plugging the trephine opening and the conjunctival flap is restored to its position and usually retained by one or two sutures. Permanent filtration follows from the anterior chamber through the trephine opening into the subconjunctival space. The greater ease and safety of the Elliot operation as compared with those of von Graefe and Lagrange are discussed. Trephining is advised in acute and chronic glaucoma.

Moulton, H.: The Surgical Treatment of Glaucoma. J. Arkansas M. Soc., 1914, xi, 113.

By Surg., Gynec. & Obst.

In discussing von Graefe's iridectomy and Elliot's trephine operation, Moulton asserts that

the former is usually successful in acute and many complicated cases, while for the chronic cases the latter is resorted to.

The essentials of iridectomy are: (1) an incision through the sclera close to the cornea and (2) removal of a piece of iris at its periphery. Efficacy is supposed to result from opening a corresponding portion of the anterior chamber angle, which was closed by the base of the iris being pushed against the sclera and cornea, thus causing the aqueous to drain through the lymph-spaces at the anterior

chamber angle.

Elliot's operation differs from von Graefe's iridectomy in that it opens up a new and artificial channel of drainage. A triangular conjunctival flap is dissected from above the cornea downward with its attached base toward the cornea. Superficial layers of cornea are undermined so that the sclera over the anterior chamber angle and a small margin of clear cornea are uncovered. The flap is laid over the cornea. A 2 mm. round trephine opening is made through the sclerocorneal junction into the anterior chamber with the excision of a piece of iris. The conjunctival flap is stitched into place, thus establishing a permanent subconjunctival opening into the anterior chamber through which the aqueous drains, as evidenced by the ædematous flap and lowered tension. C. A. MAGHY.

Elliot, R. H.: Some Points in Connection with the Operation of Sclerocorneal Trephining. Tr. Clin. Cong. Surg. N. Am., London, 1914, July.

By Surg., Gynec. & Obst.

The author discussed a number of points in connection with the operation of sclerocorneal trephining. His conclusions are:

- 1. The vesicular type of filtering scar is wrong, dangerous, and unnecessary. It involves a risk of late infection, and must be avoided by the adoption of a correct technique, the principles of which are: (a) the reduction of the necessary dissection to a minimum, and (b) the making of thick-based flaps. The thickening of the base must include both the conjunctiva and the cornea. Under this treatment the objectionable type of scar is avoided and there is established a filtering area so wide as to be coterminous with the bulbar conjunctiva itself.
- 2. The impaction of uveal tissue in the hole is the gravest danger attending the trephine operation. It may occur (a) at the time of operation, owing to the iris being dragged into the hole by the surgeon or being pushed there by pressure from behind, and (b) it may occur after the patient has been returned to bed. The pros and cons of performing an iridec-

tomy as a routine step of the operation are considered, and the author advises that a peripheral buttonhole iridectomy be performed with the same snip that cuts the hinge of the disc. Impaction, due to a vis a tergo, calls for "masterly inactivity." A late prolapse of iris should be excised after raising the flap.

3. The graduation of the size of the fistula produced can be controlled when dividing the disc with scissors after the trephining has been performed. The technique is given, and the broad indications for the necessary graduation are ex-

plained.

4. The plea is entered that in discussing the cases of late infection after trephining, care should be taken to consider the question in all its bearings so that the sense of proportion may be maintained.

# Mayo, C. H.: The Surgical Treatment of Exophthalmos. J. Am. M. Ass., 1914, lxiii, 1147. By Surg., Gynec. & Obst.

Mayo states that exophthalmos of slight degree may occur in high degrees of myopia but extreme conditions are more commonly caused by growths of soft tissue or bony tumors in the back of the orbit, and rarely it may be produced by arteriovenous aneurism. The only constitutional disease causing it is exophthalmic goiter. The peculiar staring with widening of the palpebral fissure is often confused with exophthalmos. Such a condition may be caused by myocardial disease or one which is complicated by myocardial changes; e.g., chronic toxic myocarditis or advanced Bright's disease.

Graves laid particular stress upon the protrusion of the eye in the syndrome of symptoms accompanying the disease called by his name, and the other symptoms occurring without it were looked upon as pseudo Graves' disease. The eye symptoms in hyperthyroidism are so striking in character and so distressing to the mind of the patient that they have been the occasion of much discussion. Undoubtedly the condition marks a peculiar involvement of the sympathetic nervous system, and Jaboulay, while not the first to note this, was the first to operate for exophthalmic goiter by resection of the sympathetic ganglia, a method also frequently employed by Jonnesco and Abadie. The operation is not difficult and it relieves the eye symptoms in a higher percentage of cases than does thyroidectomy. Its value for the general cure of the disease is not discussed.

The author has employed sympathectomy with marked success in cases in which thyroidectomy failed to relieve the exophthalmos although practically curing the other symptoms.

#### Higgens, C.: Cases of Recovery from Detachment of the Retina. Lancet, Lond., 1914, clxxxvii, 691. By Surg., Gynec. & Obst.

Higgens, reports three cases of recovery from detachment of the retina. At a meeting of the

Ophthalmological Society in January, 1902, he read notes of the recovery of such a case. Members of the organization expressed doubt of the permanence of the case. He now republishes the case with a further history giving the required information, together with notes of two other cases.

A woman, 27 years of age, with myopia, consulted him in 1892. On August 23, 1899, the case gave a history of sudden dimness of vision in the left eye; there was a large detachment of the retina below. The treatment consisted of recumbent position most of the day, and the rubbing of 10 per cent oleate of mercury into the temple and forehead. On August 30th the case showed improvement. Part of the field that had been faulty could now distinguish pencils, keys, etc. In 1901 the patient complained of obscuration of the upper field in the right eye. The retina was found detached. The patient was ordered to lie down the greater part of the day, daily vapor baths were ordered, and she was instructed to take eleven drachms of unguentum hydrargyri daily and use an astringent mouth wash. treatment was continued for eleven days. month and twenty days after the condition was discovered it was noted that vision was as good as it had been before detachment.

The second case was a high myopia with retina detachment. Mercurial inunction to temples and forehead was ordered. The eye was bandaged at night and atropine drops taken once a day. When seen and carefully examined years afterward the eye showed no sign of detachment of the retina.

The third case had a large detachment of the retina in August, 1890. Atropine drops and iodide were given and the patient rested six hours a day for two months. On July 23, 1902, the field was full; in 1904, the vision continued to show the same good results.

good results. Higgens sa

Higgens says that from his experience he believes all operative treatment is worse than useless. He notes that the treatment that seems to hold out the best is rest in the horizontal position continued for weeks. Measures were used to cause removal of fluids, such as sweating, purgatives, absorbents, and abstinence from fluid nourishment. The cases were undoubtedly cured, but he does not say whether the credit is given to the treatment or is merely coincident with it.

T. J. DIMITRY.

# Knorr, E. A., and Maldeis, H. J.: Report of a Case of Tuberculosis of the Eye. Maryland M. J., 1914, lxii, 253. By Surg., Gynec. & Obst.

The disease occurred in a male 32 years of age. The right eye was the affected one with no signs of disease in the left. An exudate protruded into the aqueous humor which prevented an inspection of the fundus. Subcutaneous injections of old tuberculin, 1:1000 mg. gave slight reaction. The eye was enucleated and the author presents a complete pathological report.

Microscopical examination demonstrated disseminated miliary tuberculosis apparently beginning in the ciliary processes or the iris. The choroid showed miliary tubercles scattered through this membrane.

The authors review the literature on this subject under the three groups as clinically observed: (1) miliary tuberculosis; (2) recurrent hæmorrhages of the retina and vitreous followed by proliferation in the retina; (3) toxic tuberculosis.

GUSTAVUS I. HOGUE.

#### Bell, G. H.: A Case of Tuberculosis of the Sclera of Probable Primary Origin. Med. Rec., 1914, By Surg., Gynec. & Obst.

The author reports a case of tuberculosis of the sclera of probable primary origin in a white patient, aged 20, whose history, general examination, and tuberculin tests proved the absence of tuber-

culosis elsewhere in the body.

The treatment, consisting of tuberculin bacillen emulsion ("B.E."), varying in doses from .00004 gm. to .o6 gm. given every fourth day and extending over a period of seven months, reduced the inflammation of the sclera with nodules and corneal involvement, leaving no indication of disease except some scars on the cornea and scleral pigmentation. Vision with correction, when treatment commenced was O.D. 20/15; O.S. 20/30; and when discharged was O.D. 20/15 with plus .50 axis 105°; O.S. 20/20 with minus .50 and plus 1.50 axis 90°

C. A. MAGHY.

#### Fisher, C.: Choice of Methods in the Removal of the Eyeball. Tr. Northwest. Railway Surg. Ass., Chicago, 1914, Dec. By Surg., Gynec. & Obst.

There is a choice of four operations in the removal of the eyeball: (1) simple enucleation, (2) enucleation with the insertion of fat, paraffin, glass balls or gold balls in Tenon's capsule, (3) evisceration, (4) evisceration with insertion of a glass ball in the scleral cup. The use of fat and paraffin protheses as well as the insertion of a glass ball in the scleral cup are not recommended. Simple enucleation without suture is very desirable save for faulty cosmetic effect, which may be remedied by the insertion of a glass ball. This method is best for tumors of the globe, painful, blind, or shrunken eyes, tuberculosis, panophthalmitis with much orbital cellulitis, badly lacerated globes, and especially—for the surgeon's protection—in the prevention or cure of incipient sympathetic ophthalmitis.

In all other cases evisceration is strongly recommended because of the superior cosmetic result. There is no proof of the stump causing sympathetic ophthalmitis in cases where the uveal tract is thoroughly removed. There is much unfounded

prejudice against this operation.

Local anæsthesia may, as a rule, be used in enucleations; occasionally in eviscerations.

#### EAR

Dabney, V.: Vaccine Therapy in Ear Disease; Further Contribution to the Study of the Subject. Laryngoscope, 1914, xxiv, 866. By Surg., Gynec. & Obst.

The author regards vaccine therapy as an additional measure only, and believes it should never be undertaken to the exclusion of any and all the usual precautions. Success depends much on the culturing and preparation of the vaccine, and the method of its administration. He uses vaccines in acute cases also but waits from five to seven days. This delay (1) allows the discharge to give some intimation of its virulency, indicating the use or non-use of vaccine; (2) increases the chance of the vaccine acting beneficially, it being well known that a vaccine acts better after this pause than if given earlier before nature has well organized its phagocy-

The following organisms and adult dose are given: Staphylococcus pyogenes aureus and albus, 250

million.

Streptococcus pyogenes, 25 million. Bacillus of proteus type, 30 million. Bacillus of pseudodiphtheriae, 40 million.

Injections are repeated every 3 to 4 days and increased one-third depending on the reaction and the progress of the disease. Nephritis, diabetes, tuberculosis, and severe constitutional depletion are contra-indications. It is wise to give an additional dose after apparent recovery.

For furunculosis of the canal the author regards vaccines as a specific, unless due to diabetes, lues,

or tuberculosis.

In commending this therapy the author states that he has no illusions on the subject and that there is no royal road to cure for afflicted ears; it should not be used except with the other means of treatment employed by the experienced physician.

In an appended table the author tabulates 36 cases of furunculosis, all cured; 22 cases of chronic suppurative otitis media with 7 cured, 5 improved, and 10 unchanged (2 diabetics); 23 cases of subacute suppurative otitis media with 18 cured, o improved, and 5 unchanged; 15 mastoid sinus cases with 9 cured, 4 improved, and 2 unchanged (2 diabetics).

Отто М. Котт.

#### Lougee, J. L.: End-Results Following the Yankauer Operation on the Eustachian Tube. J. Am. M. Ass., 1914, lxiii, 1576.

By Surg., Gynec. & Obst.

Following curettage of the eustachian tube in twenty-five cases with histories of discharge from the ear for from two to thirty-five years, in but one case did the tube remain permanently closed with the ear dry. ELLEN J. PATTERSON.

# SURGERY OF THE NOSE, THROAT, AND MOUTH

#### NOSE

Thompson, J. A.: An Uncommon Case of Nasal Hæmorrhage. Laryngoscope, 1914, xxiv, 889. By Surg., Gynec. & Obst.

The sites of the hæmorrhage in this case were (1) from the angiomatous tissue of the right inferior turbinate; and (2) from a superficial ulceration low

down on the right side of the septum.

The two unusual features were: (1) the hæmorrhage from the angioma could be controlled only by the complete removal of the tumor; (2) the performing of a submucous resection purely for the cure of hæmorrhage from the septal ulceration.

Отто М. Котт.

Fein, J.: Paraffin Injection in Saddle Nose and Ozæna (Die Paraffineinspritzungen bei Sattelnasen und bei Ozæna). Wien. med. Wchnschr., 1914, lxiv, 929. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Congenital saddle nose or that acquired from constitutional causes, such as ozæna and hereditary syphilis, is well adapted to treatment by injection of cold paraffin.

Cases of saddle nose with adherent, resistant skin scars or those in which the bony framework has been destroyed by trauma or necrosis are not adapted to this treatment. In these the surgical

method of implantation is to be preferred.

The dangers of injection are reduced to a minimum by the use of correct technique. The injection is best given just below the tip of the nose in the septum membranaceum, because the skin there is very elastic and the opening made by the injection closes immediately. Injection should not be made from the side of the nose. If the needle is inserted just at the midline there is no danger of injuring vessels. Care should be taken also to make the injection subcutaneous, for if the needle goes deeper it passes under an aponeurosis, which pushes the paraffin aside. Anæsthesia is both unnecessary and undesirable, because the pain caused by the injection is slight and the form of the nose is changed by the infiltration. Symptoms of inflammation, which occasionally appear, should be treated by cold compresses. Displacement of the paraffin is best prevented by pressing the skin firmly against the bone during the injection; this also practically excludes the danger of embolism. The results are very durable.

Paraffin injection is to be recommended in ozæna. The deposit is made in the lower muscle, the anterior part of the middle muscle, the floor of the nose, and the septum. It is best carried out under local anæsthesia with 10 to 20 per cent

cocaine. Noses with a thin, easily torn mucous membrane are not adapted to this treatment. The injection can be made only when the mucous membrane is tolerably thick and somewhat succulent, but in unfavorable cases an attempt can be made, by irrigation or by painting with iodine glycerine, to make the mucous membrane softer and more elastic and so better suited for the injection.

HOHMEIER.

#### THROAT

Biedert, C. C.: Affections of the Lingual Tonsil and Their Treatment. Laryngoscope, 1914, xxiv, 885. By Surg., Gynec. & Obst.

The affections of the lingual tonsil mentioned by the author are: simple inflammation and hypertrophy; lingual varix; tuberculosis; syphilis; malignant disease; mycosis pharyngeus; various benign tumors.

Lingual varix is of frequent occurrence and gives rise to an irritative cough and later hæmoptosis from

rupture of one of the vessels.

Simple hypertrophy gives rise to a dry, hacking, unproductive cough, which is worse at night or when the patient lies down. In other cases there will be no cough but the patient will complain of a sense of fullness in the throat or of a sensation of a lump in the throat which can neither be swallowed nor brought up—the so-called globus hystericus. Others complain of a tickling, prickling, or burning sensation in the throat.

For simple hypertrophy the author applies the glycerole of iodine solution—iodine 1 part, potassium iodide 2 parts, and glycerine 3 parts—every second day for three or four applications. If this is unsuccessful the cautery is recommended or the lingual tonsillotome. Varix is treated in the same way. Mycosis is treated by application of AGNO<sub>3</sub>, 60 gr. to 1 oz. Otro M. Rott.

Schmiegelow, E.: Operative Treatment of Intralaryngeal Cancer (Resultaterne af den operative Behandling—Laryngofissur—af den intralaryngeale Cancer). Hosp.-Tid., Kjøbenh., 1914, lvii, 1225. By Surg., Gynec. & Obst

Schmiegelow's report on 66 operative cases of cancer of the larynx was presented at the Clinical Congress of Surgeons held in London last July. He emphasizes that in by far the greater number of cases the cancer started in the vocal cords, and that cancer originating in this location is more readily and completely eradicated, because it induces hoarseness almost from the start and is thus detected early; besides, the growth is very slow.

The prognosis in cancer of the larynx is generally grave, but an exception is found in the pedunculated adenocarcinomata growing from the superior aditus

laryngis.

Among the author's 66 cases of laryngeal cancer, 5 were removed through the mouth, and 4 of these succumbed to recurrence; death resulted in all the 8 cases treated by tracheotomy, in the one case treated by subhyoid pharyngotomy, in the 4 by partial resection, and in all but one of the 9 by total resection. Of the 33 cases in which the cancer was removed by thyrotomy, 18 were cured, 5 succumbed to pneumonia, and 10 to recurrence. interval since the operation has been from 10 to 18 years in 4 cases, from 3 to 9 years in 9 cases, and 2 years in the others. Two of the patients died: one from cancer in the rectum and one from cancer in the stomach 8 and 18 years after the operation; at the necropsy the larynx was found clinically normal. He compares these results with those reported by Semon, 24 cases; Chiari, 29; and Thomson, 10—a total of 96 cases of thyrotomy for laryngeal cancer, with 61 surviving for more than a year, that is, over 63 per cent; 9 did not long survive the operation and 25 died of recurrence.

Theisen, C. F., and Fromm, N. K.: The Use of Normal Horse Serum for the Prevention of Hæmorrhage in Nose and Throat Operations. Albany M. Ann., 1914, xxxv, 550. By Surg., Gynec. & Obst.

The authors report their results with the use of blood serum before operating in a series of eight cases in which, from the history obtained, an unusual amount of bleeding was expected, but in which there was practically no bleeding after operation. The coagulation time of the blood was determined before and after injection of the serum and in every case there was a decrease in the coagulation time as follows:

1. Male, age 27. Coagulation time before injection was 4 minutes. Ten ccm. of serum was injected fifteen hours before operation. The coagulation time after the injection was 3 minutes.

- 2. Female, age 9. Coagulation time before injection was 5.5 minutes; after the injection of 10 ccm. of serum the coagulation time was 4.25 minutes.
- 3. Female, age 9. The coagulation time was reduced from 4 to 3.5 minutes.
- 4. Female, age 10. The coagulation time was
- reduced from 4 to 3.5 minutes.
  5. Male, age 9. The coagulation time was
- reduced from 4.75 to 3.5 minutes.

  6. Male, age 7. The coagulation time was
- reduced from 5.5 to 4.75 minutes.
  7. Male, age 20. The coagulation time was reduced from 7.25 to 6 minutes.

8. Male, age 9. The coagulation time was

reduced from 6.5 to 4.75 minutes.

In the last two cases 15 ccm. of serum was injected. Thus the average coagulation time of these 8 cases was reduced from 5.18 minutes to 4.12 minutes.

The authors reach the following conclusions:

1. Considering the comparative safety in the use of the serum, and the great lessening of the danger of post-operative hæmorrhage, it should be used whenever an operation must be undertaken in a subject of the hæmorrhagic or hæmophiliac diathesis.

2. When it is used in such cases prior to operation, the operator leaves his patients with a feeling of much greater security and with the probable assurance that he will not be summarily called to the hospital to deal with an alarming hæmorrhage.

3. Judging by a search of the literature, the much heralded danger of anaphylaxis is practically nil when, as in the authors' cases, only one injection of serum is necessary. Отто М. Котт.

#### MOUTH

Greig, D. M.: Primary Hypertrophy of Gums; Reduplication of the Lip. Edinb. M. J., 1914, xiii, 317. By Surg., Gynec. & Obst.

The author reports three cases seen by him in a general surgical practice and he concludes that the disease is more frequent than his observations seem to show.

It is characterized by hyperplasia of the gums, which are apparently normal, the crowns of the teeth more or less embedded in the symmetrical and bilateral overgrowth which was more marked in the

lower than in the upper jaw.

The gum tissue was firm, not tender, and had no undue tendency to bleed. The patients all sought relief from the deformity alone; two were adults, a man and a woman, the other was a child. The growth is not of the character of a nævus; neither is it allied to the spongy gums of scurvy or to the local manifestation of constitutional disease. It is also distinct from the gums seen in pyorrhœa alveolaris and calcific inflammation.

The author thinks it a true congenital hypertrophy although it may not manifest itself until

the eruption of the teeth takes place.

It must not be confounded with myeloma, or unilateral hypertrophy which may be general or localized. The treatment was simple and curative; viz., under an anæsthetic a knife was firmly drawn along the gum at its proper level and the strip so marked off was removed from both jaws. wounds healed readily and there was no recurrence. The author briefly reviews cases reported. He has examined three casts in the Edinburgh Dental Hospital which are representative of this condition, but in the cases reported there is some doubt, in some of them at least, as to whether they were primary hypertrophy or not.

Greig describes what he believes to be a rare disease, an overgrowth of seemingly normal gum tissue in which to a greater or less extent the teeth are buried. It leads to no increase; the relationship

of gums to the teeth remains in the same proportion. Removal of the gum tissue is not followed by regeneration; the gums are of normal firmness and color, and the patients have no other abnormality with which such a condition could be in etiological affinity. The author also reports three cases of reduplication of the lips which on account of the deformity or interference with artificial teeth renders surgical relief desirable.

The abnormality is a reduplication of the mucus of the upper lip and may be as large as the lip itself, and may be visable only upon talking. This condition is not to be confounded with a hyperplasia caused by an ill-fitting denture. Operation is satisfactory, the portion to be removed being marked off while the lip is at rest.

H. A. Potts.

Levy, M.: Radium Therapy in Dentistry (Radiumtherapie in der Zahnheilkunde). Strahlentherap., 1914, iv, 123. By Surg., Gynec. & Obst.

Radium treatment in dentistry may be applied in two ways: either by local applications of solid radium salts or by local or internal applications of emanations. Malignant tumors of the mucous membrane of the mouth are quite frequently refractory or may even grow worse. Good results are sometimes obtained in inflammatory processes of the mucous membrane of the mouth and jaw, in pyorrhœa alveolaris, acute and chronic pulpitis, as an analgesic insensitive dentine, and also in epulis,

leucoplakia, aphthous stomatitis, and desquamation of the mucous membrane.

The author has given short irradiations with tubes and longer irradiations with radium compresses. He has had good results with these in local inflammatory processes, marginal gingivitis, stomatitis, epulis, ulcers, and leucoplakia of the tongue, less favorable ones in pyorrhœa alveolaris. In the latter condition the emanation treatment is best, because of its stronger bactericidal effect and its specific effect on the body ferments. Radium emanations as well as thorium emanations in the form of thorium-X can be used. It is used in the form of douches, which produce hyperæmia of the mucous membrane and also activation of the saliva. Treatment may also be given in the form of irrigations, injections, insertion of radium carriers in the pockets of the gums, and massage with radium paste. These methods have given very satisfactory results in psoriasis of the mucous membrane, gingivitis, stomatitis, pyorrhœa alveolaris, leucoplakia of the mouth, fistulæ of the teeth, acute suppuration following infection, and infected extraction wounds. Pyorrhœa alveolaris is very frequently the result of a constitutional process.

Levy calls especial attention to the fact that a latent gout can often be demonstrated by uric acid examination of the blood; therefore a drink or inhalation treatment with emanations is recommended with general treatment.

A. Goss.

#### OF CURRENT LITERATURE BIBLIOGRAPHY

# GENERAL SURGERY

## SURGICAL TECHNIQUE

Note. The bold face figures in brackets at the right of a reference indicate the page of this issue on which an abstract of the article referred to may be found.

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# SURGERY OF THE ABDOMEN

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# INTERNATIONAL ABSTRACT OF SURGERY

MARCH, 1915

# COLLECTIVE REVIEW

# THE NEWBORN

REVIEW OF LITERATURE FROM JANUARY, 1912, TO NOVEMBER 1, 1914<sup>1</sup>
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#### I. GENERAL

(a) INFANT MORTALITY

HALMERS states that one-third of the deaths in infants in the first year of life occur under one month of age, and that one-half of the deaths occurring in the first month occur in the first week. In other words, one-sixth of all deaths occurring in the first year of life occur in the first week of life. He states, however, that two-thirds of the babies who die in the first week of life, die of causes suggesting cell deterioration in the antenatal stage. These babies are therefore "born to die," and this much of the infant mortality must be ascribed to antenatal influences.

Koplik in general agrees with Chalmers that prenatal influences are largely to blame for this high mortality in the early weeks of life. He considers the mortality of the first four weeks of life from the following standpoints: (1) infants born prematurely and congenitally weak though free from constitutional disease such as syphilis; (2) infants apparently free from disease but who fall below a definite standard of weight, including all stillbirths occurring without accidental birth complications; (3) stillbirths which result from accidents in delivery or from instrumental interference; (4) infants who are born of good weight, viable, and free from constitutional disease, who die of some acquired affection or condition of life into which this class of infants is born—that is, their legitimacy or illegitimacy is a great factor in the continuance of life, and also, whether they are born in poverty or are surrounded by all the necessities of life is another influence to be fully considered; (5) infants who are born prematurely, of good weight,

<sup>&</sup>lt;sup>1</sup> So far as possible the writers collected all of the literature on this subject for the period here mentioned. Doubtless some publications have escaped their notice, and it has been thought wise in certain instances to include in this review writings which appeared a short time previous to January, 1912. Following the text will be found a complete list of references, grouped under various headings to correspond with the igeneral outline here given.

and viable, but are the subjects of constitutional disease.

In premature infants the body temperature is of great importance. In the years 1911-1912 in the city of New York of 132,776 births, 6,740, or 55 per cent, were stillbirths. In the first weeks of life mortality is not nearly so high among breast-fed as among bottle-fed babies. Illegitimate infants suffer from a very much higher mortality than do legitimate. In the borough of Manhattan in the years 1911-1912, 4.1 per cent of all infants died in the first four weeks; this represents 33.2 per cent of the total death-rate in the first year. Of the 5,279 infants who died, fully 60 per cent died as a result of neglect, ignorance, and poverty. The excessive mortality in the first few weeks of life is caused by prematurity, congenital malformation, and feeble vitality. Over four-fifths of the deaths of the first week are due to these three causes. From 70 to 73 per cent of the deaths which occur in the first four weeks of life occur in the first week. The second week shows only 13.5 per cent; the third 8 per cent and the fourth, 5 to 7 per cent. To overcome this excessive death-rate in the first week of life it is necessary to consider the antenatal conditions. The mother should be provided during pregnancy with rest, good food, and quiet The deaths of artificially fed surroundings. infants are probably due, not so much to the artificial feeding as to the ignorance and indifference of the mother in carrying out the physician's instructions.

In 1910 in the Department of the Seine, Wallich reports that there were 4,833 deaths in 49,275 births, 1,508 deaths occurring in the first month. According to his statistics, mortality is greatest in the first and third weeks of life. He divides the causes of death into three groups: (1) obstetrical causes; (2) umbilical infections, gastrointestinal infections, prematurity, artificial nursing; and (3) social causes, dwelling particularly

on the question of illegitimacy.

Most interesting in connection with infant mortality in the newborn is the thesis of Kerness. His statistics are taken from the Gynecologic Clinic at Munich, including the time from October 1, 1907, to October 1, 1911. In that time there were 10,297 births. Of these, 149, 1.45 per cent, were abortions; 538, 5.22 per cent, still-births; 9,610 were, therefore, born alive. Of this number, 248 died; only 6 of these lived beyond the eighth day. Of the 242 which died before the eighth day, 181 were premature, 75 per cent, and 61, 25 per cent, full-term. He divides the causes into: (1) birth injury, (2) injury to the mother

through disease; (3) congenital debility; (4) anomalies and diseases acquired after birth. As to the premature infants, of which there were 181 the causes of death were divided as follows:

1. Birth injuries, 12 cases, 6.6 per cent.

2. Parental diseases, 24 cases, 13.3 per cent. Of these 24 cases, 4 were in the seventh month, 2 of which were tainted with congenital syphilis and 2 had eclampsia. Seven were in the eighth month; of these, 3 had congenital syphilis and 4 were cases of placenta prævia. Of 13 which were in the ninth month, 4 were due to congenital syphilis, 3 to placenta prævia, 3 to tuberculosis, 2 to nephritis, and 1 to eclampsia.

In 140 cases, 77.35 per cent, the cause of death was due to congenital debility. Of these from the fifth to the seventh month — 61 births — 7 died immediately, 24 on the first day, 9 on the second, 4 on the third, 2 on the fifth, and 1 on the sixth. Of those in the eighth month — 36 — all except 4 died on the first day. Of those in the ninth month — 43 — all died in 5 to 6 days. In 5 cases death was due to anomalies or acquired disease; anomalies in 2 cases; atelectasis, bronchopneumonia, and convulsions, each one case.

Of the others, 21, or 34.4 per cent, died as a result of birth injury — 4 narrow pelvis, 8 version, and 9 forceps. Eleven, or 18 per cent, died of parental disease: tuberculosis in two cases, nephritis 1, eclampsia 4, gonorrhea 2, and congenital syphilis 2. The cause of death in 16 cases, or 26.2 per cent, was congenital debility. In 8 cases, or 13.1 per cent, anomalies and acquired diseases accounted for death; in 3 cases anomalies; in 5 cases acquired disease; convulsions 3; bronchopneumonia 1; melana neonatorum 1. The cause of death in 5 cases, or 8.2 per cent, was unknown. According to Kerness, of full-term children, only 1 per cent died in the first 8 days of life.

(b) ANATOMY

In describing the *oral cavity* of the newborn Gundobin states that the hard palate is flat; occasionally on the posterior portions of the raphe, osseus processes are seen. These start as epithelial accumulations. The soft palate has a more horizontal direction than in the adult. The pharynx is almost in line with the hard palate. The cavity is dry, and in the first few days of life there is a desquamation of the epithelium.

In regard to the presence of *teeth* at birth, Balard and Commes state that in the Maternity of Paris from 1858–1868, of 17,578 newborn only 3 had teeth, and of 10,000 in the obstetrical clinic at Bordeaux only 2 cases have appeared. Cases

usually appear in large infants and have been regarded simply as premature eruption of the The condition seems to be especially frequent among the South American Indians. It is to be noted that many cases are accompanied by gingivitis; this is possibly an inflammation of the dental follicle but no definite evidence has been presented by examination of the follicle. Some writers regard the condition as teratologic.

They report 3 cases, 2 of which were exactly similar. At birth no teeth were found. The next day when the children were put to the breast a lower incisor tooth was discovered; on the third day the corresponding lower incisor pierced the gum. In each case the teeth were extracted because of the pain to the mother during the nursing Apparently the extraction caused little or no pain but was accompanied by a drop of blood. The cavity left was obliterated in two to three days. Each tooth had a slender soft root. No other malformation was noted and the children left the clinic on the fifteenth day and were lost track of.

The third case was that of an infant which had a cyst of the right iris. At birth it had two inferior median incisors; these fell out spontaneously three weeks after birth. There was no hæmorrhage and no inflammatory swelling of the gums. At 6 months another median inferior incisor erupted but lasted only a short time and the second incisor did not appear.

On examination the teeth were found to be well formed but the pulp was in a connective tissue rich in cells; especially lymphocytes and leucocytes with many bacteria abounded at different points. Balard and Commes conclude that they had to do with teratomata undergoing degeneration and inflammation of bacterial origin, and believe that these teeth are true teratomata in all instances.

Herpin reports a case where a tooth was present at birth. The tooth was mobile and had an embryonal dental bulb. In parts the enamel cap was well formed but in other places it was irregular and contained lacunæ. In this case there was no connective-tissue formation about the bulb. thus eliminating the idea of a buccal inflammation as the causal factor. Herpin states that this was evidently an ectopia of the dental gum; possibly the presence of teeth in the newborn represents an atavistic tendency.

Debegue has collected 20 cases from the literature. He divided these into two classes: (1) those which are true milk teeth prematurely erupted; (2) those which present anomalies of form, color, and consistency and fall out in a few days or weeks. These in no way play the rôle of the temporary teeth.

Wilson, in speaking of tonsils in childhood, states that the palatine tonsils are present in all mammals excepting the rat and the guinea pig and they always communicate with the pharynx. They develop from the endothelium of the second branchial pouch and around these ingrowths the lymphoid tissue of mesothelial origin forms giving us the normal lymphoid picture of the organ. The tonsils begin to develop about the fourth month of embryonal life and reach maturity at the end of the first year of infancy.

In speaking of the morphology of the blood Gundobin gives the following table of 8 newborn:

Time of Taking Blood	No.	You Cel		Mati Cel		Over- Mature Cells		
	White	Absol.	Per	Absol.	Per cent	Absol.	Per	
From umbilicus	18,000	7,020	44	1,620	D	8,460	47	
Immediately after birth.	18,000	4,140	23	2,340	13	11,520	64	
6 hrs. post-partum	22,000	4,180	19	2,420	II	15,400	70	
24 hrs. post-partum	23,000	5,060	22	2,300	IO	15,640	68	
48 hrs. post-partum	19,000		21	1,900	IO	13,110	69	
5 days post-partum	8,500	2,720	32	680	8	5,100	60	
7 days post-partum	11,000	5,500	50	1,320	I2	4,180	38	

It is seen that at birth and immediately thereafter the white cells are twice as numerous as during the remainder of infancy, but the fifth day the number is reduced below the normal but returns again by the seventh to the tenth day.

As to the red blood-cells he states: (1) The size varies between 3.25 and 10.25 microns in diameter. (2) They take up moisture more quickly than those of the adult and react differently to reagents. (3) Hæmoglobin is not in so permanent (4) The cells contain more a combination. stroma. (5) Nucleated red blood-cells are often seen. (6) Microcytes are more frequent in the newborn than later in infancy. (7) There is very marked variation in the total number of red blood-cells during the 24 hours. According to various authors the total number of cells varies from 4,500,000 to 8,300,000. On the fifth to the seventh day the total number of red blood-cells is very unlike in different cases but tends to decrease 500,000 to 800,000.

Asphyxia as well as late tying of the cord increases the number of red blood-cells but not to a marked degree. He gives the following table in regard to the hæmoglobin content of the blood

of the newborn:

	TST	day															104	5	ner	cent	
	2nd	day	Τ.			٠			٠	٠	٠	٠	٠				104.	2	per	cent	
	3rd	day															100.	I	per	cent	
	4th	day						٠		٠							96.	5	per	cent	
																				cent	
																				cent	
т	4th	day															00	8	per	cent	

The chemical characteristics of the blood of the newborn are as follows: (1) The specific gravity at the time of birth is 1.0161, of the plasma 1.0285. (2) The hæmoglobin content is 14.27 per cent and is greater than in the pregnant woman. (3) The iron amounts to 0.0512 per cent and is greater than in the pregnant woman. (4) The dry residue for 100 gms. of blood is 23.864, and of plasma 8.7388; the dry residue for 100 gms. of red blood-cells is 37.3038. (5) At the time of birth the blood is rich in stroma; 100 gms. of red blood-cells equals 10.42 gms. stroma. (6) The content of insoluble salts is twice as large as in the adult, 0.3651 per cent, while the plasma contains only 0.1524 per cent or about the same as in the adult. (7) The average content in bases (sodium and potassium) is smaller, and of chlorine greater than in the adult. (8) The blood is richer in sodium and poorer in potassium than in the adult. (a) The sum of the sodium and potassium is smaller than in the adult.

In summing up the characteristics of the blood of the newborn he draws these conclusions:

- The morphologic changes occurring in the blood of the newborn in the first day of life cannot be explained by the usual physiological conditions.
- The weight variations of the newborn and the qualitative and quantitative changes of the four elements of their blood stand in relation, in so far as they are produced by the same general causes.
- 3. The probable cause for the variations of the blood of the newborn from the blood of the infant in its morphological properties as well as its chemical composition lies in the variation of the nitrogen metabolism of the newborn from the normal.
- 4. The organism of the newborn is found in a pathological condition and is therefore not able to offer resistance to the various disease-producing factors.
- 5. In the normally developed child the examination of the morphology of the blood gives far more certain evidence for the determination of the term "newborn" than any of the definitions proposed up to the present time for the determination of the duration of this period of life.

Vogt by injecting the arteries of a stillborn infant with Hauch's mixture — red lead 120,

liquid paraffin 120, oil of turpentine 40 — was able to secure accurate X-ray pictures of the arteries even down to the smallest capillaries.

Miura states that the apex of the *heart* after birth is found in the third intercostal space in or just outside the left mammary line. The whole heart is almost covered by the lungs. After birth it is much larger, due to the greater demand upon it, and the first heart-tone is strengthened. He finds that the heart muscle is well supplied with fat and glycogen.

After examination of the lungs of the human feetus and those of guinea pigs and rabbits, Ridella is convinced that the flattening of the alveolar epithelium of the *lungs* is not alone due to the breathing of air but to similar intra-uterine movements in a medium other than air.

Addison and How also state that the prenatal lung has a fluid similar to the amniotic fluid in the respiratory passages. This is drawn into the alveoli on inspiration. Microscopic sections show a fine granular precipitate from this fluid in the air-spaces and some mononuclear cells. The lung that has breathed still shows the precipitate from the fluid and a few cells. The prenatal lung shows cuboidal cells with round nuclei lining the alveoli. These are stretched after breathing, becoming very thin and flat. mesenchyme becomes denser and the bloodvessels more prominent after birth. Measurements on cross-ruled paper show lung tissue measuring 70 to 80 per cent of the fœtal lung; 40 to 60 per cent of the lung that breathed two hours; and 20 to 30 per cent of the two-day-old lung. Expansion of the lung is not quite uniform. Premature birth and the inhaling of amniotic fluid militate against normal dilatation of the air-spaces.

In regard to the anatomy of the pancreas, Gundobin says that the connective tissue is markedly developed, the blood supply is very rich, and all vessels are distended. The single lobes are smaller. The weight of the pancreas in two newborn was 3.13 gms. and 3.59 gms. He quotes Hartje: of 8 newborn where the weight averaged 2.63 gms., the length was 5.8 cm., breadth 1.6 to 0.9 cm., and thickness 0.67 to 0.38 cm.

Wilms counted the number of islands of Langerhans in 4 newborn. The count was made of 30 fields, each measuring 3.5 sq. mm. The head and tail of the pancreas was counted. Two cases one day old showed an average per field of 51.4 and 32.4 respectively, case 4 days old, 32.1, and case 12 days old, 33. The number of islands rapidly decreases up to the end of the first year.

As to the *liver* in the newborn Gundobin gives the following report: Number of boys 8, average body weight 3,164 gms., weight of liver 148.8 gms.; number of girls 15, average body weight

3,100 gms., weight of liver 166.1 gms.

As to the anatomy of the kidney the same writer states that the convoluted tubules are relatively but slightly developed and that the peripheral layer is lacking. The malpighian bodies are 72 to 160 microns in diameter. Some of them lie directly beneath the capsule. The vascular knot is divided into 3 to 5 parts and is lined with cubical, not squamous, epithelium. He gives the following dimensions for the kidneys: two cases of newborn, body weight 3,000 gms.; kidney weight 11 to 12 gms.; length 4.2 cm.; breadth 2.2 cm.; and thickness 1.8 cm.

In 700 autopsies in which 39 per cent of the children were born alive, 26 per cent showed uric acid infarct. In another set, 42 per cent

showed uric acid infarcts.

Miura has found large deposits of glycogen in the cells of the convoluted tubules of the kidney.

Gundobin in speaking of the special characteristics of the eye of the newborn gives the following differences from the eye of the adult:

(1) The sclera bulges in the posterior outer quadrant.

(2) The position of the fovea centralis deviates strongly outside the posterior pole of the eye and does not lie on a plane with the papilla of the seventh nerve.

(3) The greater thickness of the cornea.

(4) The extremely shallow anterior chamber.

(5) The nearly conical form of the lens.

He gives the following table for the weight of the *brain* and its various portions:

Boys. 290–415 gms. Girls. 283–400 gms.	
Boys Girls	
No. of cases. 3 3 Body weight. 2785 2550	
Weight of total brain       389       354.5         Midbrain       28       26.8	
Cerebellum         23         20.5           Medulla and pons         5.6         5.8	

As to the topography of the *umbilicus* in the newborn Kakuschin gives the following statistics in regard to the proportion of the infra-umbilical

length to the total length:

Weight 890 to 2,000 gms. — 130 cases — 46.7 per cent; weight 2,000 to 3,000 gms. — 597 cases — 47 per cent; 3,000 to 5,200 gms. — 1,792 cases — 47.3 per cent; general average, 46.9 per cent. It is interesting to note that in the breech cases in infants weighing over 2,000 gms. the infra-umbilical length was 0.5 to 0.7 per cent greater than in head presentations.

In examination of the axillary sweat-glands of 18 full-term or nearly full-term babies born of albuminuric or eclamptic mothers, Fossati found degeneration of the parenchyma which ranged from cloudy swelling to necrosis. The conditions of the mothers were as follows: 6 cases of nephritis of pregnancy, 10 of eclampsia, and 2 of chronic nephritis.

In testing the porosity of the bone Töppich uses two methods: one by maceration, and the other by estimating weight and volume. He estimated the substance volume by dividing the absolute weight by the specific gravity. The porosity volume equals the bone volume — the substance volume — and the porosity is equal to one hundred times the porosity volume divided by the bone volume. His results are shown below:

	Humerus	Scapula	Pelvic Bones	Femur	Tibia
Newborn	62.41	57.84	65.16	64.63	62.89
Man 25 years old Man 82 years old		42.09 58.63	53.31 77.64	59.09 70.99	56.89 73.70

The skeleton of the newborn is therefore more porous than that of the adult. He estimated in this way that the red bone-marrow which fills the porous portion of the bone is 67.37 per cent of the volume in the newborn. The weight of the spleen in 3 infants averaged 6.4 gms., and the volume 6.023 ccm. The volume of the bone-marrow is, therefore, 11.3 times that of the spleen. The bone-marrow is richest in the skull and next in the pelvis and lower extremities.

Stratz gives the following diameters of the *skull* of the newborn: Anteroposterior 11.75 cm., lateral 9.25 cm., chin to occiput 13.5 cm. The face grows more than the vertex in the adult while the anteroposterior diameter grows 5 cm. and the lateral 6.25 cm., that from chin to occiput

grows 9 cm.

In giving characteristics of the skull of the newborn Gundobin states that the skull cap is to the facial portion as 8 to 1—in the adult as 2 to 1. All bones of the base are connected by rather broad sychondroses. The foramen magnum lies behind the middle point of the base as it does in the adult. The sutures at the vertex are joined by slight fibrous membrane. For the size of the large fontanelle he quotes the statistics of Nikiforoff: For boys, average diameter, 4.2342 cm.; maximum 5.9340 cm.; minimum 3.1605 cm. For girls, average diameter 3.9685 cm.; maximum 5.9945 cm.; minimum 2.7735 cm.

Freligh takes up the *temporal bone* and its anomalies in 150 cases of the newborn. The bone is one-fourth the size of the adult bone. The squamous portion shows no external markings.

The zygomatic process is parallel with the most convex part of the pars squamosa. There is no articular eminence. The glenoid fossa is a shallow depression and the gasserian fissure is entirely behind it. The mastoid portion has no mastoid foramen. There is no mastoid process; the digastric fossa and occipital groove are lacking. It does not lodge the lateral sinuses. Mastoid cells are found in 30 per cent of the cases. The antrum is directly above the tympanum, and is 10.8 mm. long, 6.2 mm. wide, and 7.3 mm. deep. The pars petrosa is more downward and forward and less inward than in the adult. The bony external auditory meatus is absent. One-third of the superior semicircular canals are visible. The roof of the antrum is very thin. The tympanum is about the same as in the adult. The facial nerve is much more exposed and the point of exit varies greatly.

Beattie calls attention to many of the points brought out in this paper, especially in regard to the mastoid operation, and states that the mastoid operation should be modified in infants ac-

cordingly.

Zeltner states that the shape of the *thorax* in infants conforms to that of the lungs. Often the lungs bear distinct impressions of the ribs. The measurements for the chest at birth are:

Upper thorax								
Lower thorax	diameter.	 	 	 			.33.8	cm.
Length of ste	rnum						8.0	cm.

Gundobin states that the thorax in the newborn has four forms: The first that of a four-cornered truncated pyramid with anteroposterior and lateral diameters the same. Second, same as the first with a convexity forward. The anteroposterior diameter is 0.5 to 1 cm. longer than the lateral. In the third, the sternum is somewhat depressed and the side walls convex. The fourth is broadened between the axillæ, and the diameters are the same.

The chest possesses three peculiarities: (1) the equality of the diameters; (2) its cone-shape being cylindrical in only 15 of 380 cases; and

(3) the horizontal direction of the ribs.

Meyer makes the following statement about the bony pelvis. The pelvis has three pairs of ossification centers. The first pair appears in the ilium where the body and the wing join. The second is in the ischium at the junction of the body with the ramus superior. The third pair is in the pubis. Microscopical examination showed the calcium deposited not only in the endo- and perichondral centers but also in the connective tissue, ligaments, and muscles about those centers.

Gundobin states that the pelvis of the newborn is less developed than the other parts of the body. This is especially true of the small pelvis. The sacrum is only very slightly curved forward. The plates of the iliac bones are straighter and smaller. The pubic bones form an acute angle. There is some dispute as to whether there is a difference of sex at this period.

In regard to the points of ossification about the knee-joint, Pozier states that they are usually present both in the tibia and femur, but if only one is present it is always in the epiphysis of the femur. In conclusion, he states that (1) every infant having two points of ossification, femoral and tibial, weighing 2,700 gms. or more, and 47 cm. or more long, is full-term. (2) Every infant having two points of ossification, femoral and tibial, weight 2,600 gms. at least, and measuring 44 cm. or more in length, as well as those having one point of ossification, the femoral, and weighing 2,800 gms. and measuring 44 cm. in length are at term or near it. (3) Every infant having two centers of ossification has been at least eight and one-half months in utero. (4) Every infant weighing less than 2,500 gms. and showing no point of ossification is not at term. Syphilis alone seems to retard fœtal ossification. Tuberculosis, albuminuria, etc., do not arrest fœtal bone growth.

Schieffendecker finds that the nuclei of the diaphragmatic muscle in the embryo and in the newborn are all at the edge of the fibers. The fœtal nuclei are much elongated; in the newborn they are more oval. The rows of nuclei found in the adult are not present either in the fœtus or in the newborn. In the newborn the muscle fibers lie close together and there are still broad septæ between them. The action of the diaphragm is weaker in the newborn than in the adult because of the relative preponderance of

the nuclear substance.

#### (c) PHYSIOLOGY

Much has been written on the temperature of the newborn. Gundobin states that in the early days of life the incomplete development of the inhibition centers of the cortex has its effect upon the regulation of the production and radiation of heat. This is shown by the fact that frequently inflammatory processes in the early days of life are not accompanied by a rise in temperature. The temperature is higher by 0.3° C. in boys than in girls. The average temperature of a child immediately after birth is 0.5 to r° C. above the normal average temperature. The cutting of the cord may reduce the

temperature as much as 1 to 2° C. The bath also has the same effect. Very marked reduction in temperature often follows christening. The early variations in temperature are on an average from 0.3 to 0.7° C. In taking the temperature Gundobin favors the use of a thermometer which has previously been made to register 40° C. He does not approve of taking rectal temperature, but does approve of taking axillary. The clinical importance of the temperature of the newborn is great because marked variations are usually a sign of some pathologic process.

Miura has gone into the question of warmth regulation. He states that in the newborn the heat is withdrawn from the smaller circulation; by the trauma of birth the skin of the child becomes hyperæmic and in this way much heat

is lost.

Apert finds that at the time of birth the child's temperature differs from that of the mother by 0.2 to 0.3° C.; it then begins to lower and drops 1, 2, or 3° depending on the amount of exposure to which the child is subjected. The greater the prematurity the more marked is this reaction. The reason for the higher temperature in the child immediately after birth is probably because the intra-abdominal temperature in the mother is at least that much greater than the rectal. The time after birth when the temperature returns to normal, after the original drop, varies between 10 and 40 hours. For a long time the newborn infant remains monothermic. This is especially true of the child raised on the breast; the artificially nourished infant is more apt to show an evening rise.

Devilliers, in examining 21 infants, has come to the same conclusions as Apert He states that in the infant the temperature curve is variable and irregular; in the newborn the temperature is frequently subnormal. In the first five hours of life obstetrical trauma may produce elevations in temperature. Subfebrile temperature gives a grave prognosis. Subfebrile temperature, broken by sudden rises and sudden falls, is equally grave. If, however, a sudden rise is followed by a return

to normal the prognosis is good.

Schütt in 200 cases found no instance of fever in the newborn. He believes that if such is present it is due to dyspepsia. At the end of weight decrease the temperature is within normal

boundaries in 97 per cent of cases.

As to the weight of the newborn Kaul states that the duration of labor is long in a large percentage of cases where the babies are very large. In the gynecological clinic at Breslau the large majority of children weighing over 4,000 gms. at

birth were boys, and 75 per cent of them were children of multipara. A pregnancy duration of more than 302 days was probable in 6 per cent of the cases.

Bondi, after examining the placental fat and the fat in the liver of fœtuses, came to the conclusion that the condition of the fœtus is altogether independent of the nutrition of the mother, and its growth, like that of a malignant tumor, is independent of the state of nutrition of the bearer. In 114 cases he could observe no effect from the nourishment which the mother took. The factors which influence the size of the child, according to Bondi, are: (1) heredity; (2) age of the mother—older women bear heavier children; and (3) accidents in pregnancy, diseases, etc.

Peller, on the other hand, thinks that the social condition is a most important factor in the birth weight. This conclusion is based on the observation of 5,487 newborn from a clinic and from a sanitarium. He finds that children born of parents in a superior social condition are heavier than others and ascribes this to better diet and hygienic conditions. He thinks that this is a greater factor than any other of those commonly mentioned. He takes issue with Bondi at all points. Bondi, however, reiterates his statement that the weight of the newborn is not

dependent on the diet of the mother.

Hanson, in summing up the factors which influence the weight of the newborn, comes to the following conclusions: (1) The weight of the newborn is greater in the country than in the maternity hospitals. (2) The weight of the newborn increases with the age of the mother and the number of births. (3) Children of multipara are larger if the mother as a primipara was 30 to 34 years old; young mothers have children steadily increasing in weight but the increase is not so great. (4) The weight of children of well-to-do mothers is greatest. (5) Illegitimate children are always smaller than legitimate. (6) The weight of the newborn is greatest in the fall and lowest in the spring.

Trepper in stating the weight decrease in 453 cases comes to the following conclusions: (1) The proportionate weight decrease is greatest in weak and premature children and lowest in those of average weight. It then increases with increasing birth-weight, not only absolutely but relatively, due in large measure to instrumental deliveries. (2) Because of greater weight decrease, obstetrical operations hold no especial danger to the children; however, the same in general does not hold good for maternal disease during pregnancy; but more frequently there is present the

danger due to protracted labor and asphyxia. (3) The duration of the weight decrease past the first or second day is essentially dependent upon the quantity of nourishment; it is lengthened by the occurrence of icterus neonatorum.

Benestad, in studying the weight conditions in Norwegian babies, says that the chief cause of poor weight curves in the newborn are cracked nipples, mastitis, febrile conditions of the mother, and gastro-intestinal diseases in the infant. The children reported on were put to the breast 12 hours after birth and were nursed seven times in 24 hours, every third hour during the day with a free interval between 11 p.m. and 5 a.m. The mothers nursed their own children, or if this was impossible, in nearly all instances breast milk was given. In all, 1,979 infants were studied; this included all full-term children born in the University Gynecologic Clinic at Christiania. Of these the average birth-weight was 3,466 gms.

Age	verage weight
At birth	
At end of 3d day	. 3277.70 loss=188.70
At end of 6th day	. 3410.10
At end of 9th day	. 3500.90
At end of 12th day	. 3579.90
Attained birth-weight.	Number Per Cent
Attained birth-weight. At end of 3d day	214111001
	. 146 7.38
At end of 3d day	. 146 7.38 . 912 46.08 . 1294 65.39
At end of 3d day	. 146 7.38 . 912 46.08 . 1294 65.39
At end of 3d day	. 146 7.38 . 912 46.08 . 1294 65.39 . 1522 76.91

After the loss of weight the increase is greatest in the first three days, 44 gms. in 44 hours; 6 to 9 days, 30 gms.; 9 to 12 days, 26 gms. On the average the birth-weight is attained in 8 days; one-half of the children had attained their birth-weight in 6 days, two-thirds in 9, and three-fourths in 12 days.

There was a distinct improvement in the last half of the year 1911 over the same period for 1909 due to more careful attention to the details of nursing the individual child. The first born infants averaged at birth 3,375 gms., the others 3,572 gms. The first born had a greater initial weight loss and were slower to attain their birth weight. Boys averaged 3,523 gms. as compared with 3,410 gms. for girls; the boys had a greater initial loss but gained more rapidly. children had a smaller initial loss and began to gain sooner, but showed no greater gain thereafter. The children of mothers who had lost 1,000 gms, of blood during labor lost more weight in the first three days, but gained more rapidly in the following nine days.

Babies of albuminuric mothers showed no difference in birth-weight; the initial loss was 19 gms. greater, but at the end of the twelfth day their weight was greater than that of the other babies.

In premature infants the all-important factor is the deficient development of the gastro-intestinal canal and the resulting deficient function.

As regards *length*, Rotch has shown that boys are taller than girls from birth to puberty.

Stratz shows that the body length is four head-lengths in the newborn as compared to 7.75 head-lengths in the adult.

According to Kober, the length is a more reliable sign of completion of full-term of pregnancy than is the weight. Of full-term newborn infants, 60.9 per cent were normal in length and only 44.9 per cent normal in weight. Of those with normal length 56.2 per cent were normal in weight, and of those with normal weight 76.5 per cent were normal in length. Both factors should be taken into consideration.

In regard to the *heart*, Hecht has determined the electrocardiograph reading in the newborn. One can get no idea of this from an abstract but must consult the original in which tables and curves are given.

Gundobin states that the *heart muscle* of the newborn possesses an especially marked tenacity to life. The heart depressor centers are not fully developed and functionate only weakly, which accounts for the irregularity and irritability of the heart's action. The psychic reflex is in all probability not present. The pulse-frequency varies as follows: first minute after birth, maximum 94 and minimum 72; the first day, maximum 156, minimum 95; the second to twenty-first day, maximum 164, minimum 146. He gives a table of the blood-pressure in the newborn.

Blood-pressure—Average	2030	Girls
rst day		60
7th day	81	77.7
14th day	77.8	78.4

Sex				Days o	f Life			
	I	2	3	4	5	6	7	8
Boy Boy	64 60.6 62.6	63.4 62.6	68 68.7 66	68.6 70 68	70.7 74.7 73.7	73.7 76.7 76.8	78.8	80 80
Girl	60	64.6	64.6	68 67	69 69.7	74 74	74 78.7	79 80

Balard has studied the heart-beat in 40 cases by means of the oscillometer of Pachon. He has noticed a steady decrease in the pulse-rate during the first day of life. He gives the arterial pressure at the time of birth as between 3.65 and 5.63. After birth both increase regularly. He thinks that the decrease in pulse-rate is due to decrease in temperature.

Mensi, in tracing the radial pulse, found the ascending and descending wave with a rounded

apex.

Hellin states that the *blood* serum from the umbilical vessels of the newborn is opalescently cloudy and has a rather greenish tinge. This is true of the venous blood of the pregnant woman and of the blood from the vagina during labor. The serum of the newborn gives cloudiness with normal salt.

Fleisser estimated the coagulability of the blood of the newborn by a modification of the Wright method. The modification consisted in the deposition of the clot from the tube into a linen cloth and observing the coagulum and the time when found. By the use of this method in 50 observations during the first week of life he found the average time of coagulation to be 8 min. 15 sec., and the variation from 5.5 to 13.5 minutes; with the exception of 10 cases the variation was between 7 and 10 minutes. In 50 observations during the second week the average was 8 min. and 10 sec. In 92 cases of icterus neonatorum the average was 11 min. 40 sec. to o min. 13 sec., but as high as 21 min. and as low as 7. After a month to six weeks the average was 7 min. 40 sec. In a case of umbilical infection and purpura the time was 23 minutes. In one pair of twins the time was the same, while in another, one twin showed 6.5 minutes, the other o minutes. Dyspeptic erythema, local and universal eczema, early rickets, pemphigus neonatorum, and cephalhæmatoma had no influence.

Rabinovitch examined the blood for amino acids. The blood was taken from the cubital vein of the mother and from the umbilical artery and vein of the child. The mother's blood contained 8 to 11 mg. of amino acid nitrogen to 100 ccm. In the maternal blood of the umbilical artery there was 37 mg. per 100 ccm., in the feetal blood, 100 to 137 mg. per 100 ccm.

Hermann and Neumann found that the entire fat content of the blood of the newborn was 4.365 gm. per kilo; cholesterin 0.7811 gm.; cholesterin ester 0.1413 gm.; and of palmitinic acid cholesterin ester 0.2268. There was a relatively smaller quantity of total fat, cholesterin, and neutral fats than is contained in the blood of a normal woman. It should be noted here that the fat content of the blood of the pregnant woman is much greater than in the normal.

Mensi distinguishes two abnormal types of *respiration* in the newborn, the remittent and the intermittent; these variations can occur without an increase in respiratory movement.

Niemann, speaking of gas metabolism in the newborn, states that it may have a specific position and appears to be lower than in later infancy. Further research is necessary with special arrangements and technique in order to judge the position properly.

Uffenheimer has taken up digestion in the newborn. As to the oral cavity the reaction is neutral or occasionally weakly alkaline. Acid reaction is probably caused by destruction of the milk curds. Bacteria are present during birth; among them are frequently found streptococci, and occasionally pneumococci and colon bacillus.

The saliva is formed immediately after birth, and digestive ferments are present in the stomach. The fat-splitting ferments are present at least as early as the second week of life.

The pancreatic secretion is found in the small intestines in the newborn. The fat-splitting ferments are present in all cases, while the diastatic ferment is only slightly developed.

The liver of the newborn has the ability to form glycogen and urea in the presence of ammonia; it also has a protective action against poisons. The bile is already formed in foetal life. Lactase, maltase, and invertin are found in the intestines of the newborn. Bacteria are found in the intestine within 24 hours after birth.

In regard to the secretion of saliva, Allaria states that the quantity is one-tenth to one-fifth the amount of milk taken.

As to the gastric secretion in the infant at birth, Hess finds that in all newborn before any food is ingested free hydrochloric acid is present in a considerable amount; rennin and pepsin are also to be found. The secretion of hydrochloric acid continues almost uninterruptedly for many hours whether food is taken or not. Occasionally (1 in 55) there is complete absence of hydrochloric acid, while in other instances the hydrochloric acid may be very much reduced. In one case hypersecretion was noted. The presence of hydrochloric acid in the stomach of the infant immediately after birth cannot be accounted for by any of the hypotheses so far advanced. While the gastric secretion is so marked in the newborn, the duodenal and pancreatic secretion is very

Schmidt, examining the intestinal ferments found in the meconium, came to the following conclusions:

- A distinct amylolytic action was present in meconium from all regions, but was very small in amount.
- 2. All portions of meconium split lecithin, monobutyrin, and ethyl butyrate. This action

was perhaps slightly increased in the lower parts of the bowel. Glycerophosphate was also present in four cases examined.

3. As to the splitting of proteins the action of the gastric contents was much greater than that of the meconium. The pepsin quantity in the stomach was marked. This was in the form of propepsin since this was not activated without the addition of hydrochloric acid. The same may be said for the rennin ferment. Trypsin was not present, but erepsin was found. Peptolytic ferment was found in the meconium of 4 cases examined.

Oxidases were absent; peroxydases and katalases were present. He states that there is a diastase present in the gastric content in a majority of cases, the source of which is not clear, but it is probably from the saliva.

Miura states that air is drawn into the stomach and intestines with inspiration and that from this source the bacteria in the meconium develop.

Rocomora, on examination of the intestinal flora in the first 10 days of life in 3 cases, comes to the following conclusions: (1) On the first day the meconium is aseptic. (2) The bacteria arise successively, increasing in quantity and in variety. (3) The virulent forms do not arise until the fifth or sixth day. (4) Bacilli predominate over cocci.

Mayerhofer has taken up the question of the urine in the infant and incidentally in that of the newborn. His collected abstracts contain most of the knowledge extant on the subject. As to the specific gravity, he finds that on the first day it is between 1.006 and 1.012; on the second to the fourth day 1.008 to 1.013. It then sinks slowly. It is interesting to note that the urine voided during or immediately after birth has a low specific gravity. As to the quantity of urine he gives the following table:

		Hein	Schiff	Reusing	Kotcharowski	Urine
				0		qn. per kilo.
	day	16.8	17.I	18.9	9.56	4.7
2d	day	29.7	43.2	38.6	27.4	10.7
3d	day	49.8	49.7	64.9	68.7	16.9
4th	day	93.8	116.1	84	127.7	32.0
5th	day	132.0	167.9	121.5	171.6	44.9
6th	day	206.0	213.7	147.7	215.3	57.8

In a large percentage of cases no urine is passed the first day and in a small number of cases none is passed even for as long as four days. Strong babies excrete ear ier and more than small weak ones and the infant of the multipara earlier and more than that of the primipara because the milk flows earlier and more richly in the multipara. Tea or water ncreases the amount of the urine. A deficient diuresis may be due to renal calculus. Sometimes the bladder function is lacking and there is retention of the urine with

distention of the bladder. This may be due to irritation from a stone or to tetany. The urine of the newborn is very toxic.

As to phosphorus it is to be found in the very first urine passed, but it is extremely small in amount. After the second day it increases up to the third to the eleventh day and then falls. Inorganic salts are present during the first 6 days to the amount of 7.14 to 24.75 mg. Sodium chloride increases from the fourth to the tenth day while urea decreases; with the increase of the urea after the tenth day the sodium chloride decreases. Operative births are frequently followed by glycosuria which disappears on the third or fourth day. Glycuronic acd may be present in rather large quantities on the first day of life before the ingestion of food. Indican is usually lacking on the first day and is rare on the second, but increases on the third and fourth and then decreases. Its presence is due either to putrefaction of meconium or to a product of abnormal tissue destruction. He gives the following table as to ammonia nitrogen and amino acid nitrogen in the urine, which shows that glycocoll increases up to the third day and then finally decreases:

			Nitrogen	Amino-acid Nitrogen
ist	day		 6.4	7.1
2d	day		 5.8	7.I 8.0
3d	day		 8.5	II.I
4th	day		 10.6	7.8
5th	day		 12.6	4.6
6th	day		 10.2	2.5
				3.4
8th	and oth	lays	 9.3	2.I

The quantity of urea varies within wide boundaries. At first it is very slight and increases with each day. The urea excretion begins in intrauterine life as is shown by the presence of urea in the amniotic fluid. The quantity of urea is shown in the following table:

Schiff

8 15 0 08 19 71 7 18 4 48 3 18

Reusing	6.96	8.77				
		Mill	ligrams	per Kilo		
Schiff	40.4	129.0	121.0	179.I	164.4	187.7
Reusing	18.9	85.5	173.0	165.0	257.0	288.0
Kotcharowski	. 53.08	08.10	131.03	138.87	103.7	200.51

The quantity of uric acid is shown in the following table:

Day Uric acid (mg.) Uric acid (per cent) Purine bases (mg.)		2 20.2I 0.09 I.73	0.15	99.07 0.08 6.83	5 57·53 0.04 2.50
Day	6	7	8	9	10
Uric acid (mg.)	44.56	22.23	29.70	40.50	32.70
Uric acid (per cent)	0.04	0.02	0.03	0.04	0.03
Purine bases (mg.)	6.81	4.56	trace	trace	trace

The excretion of uric acid is highest on the third to fourth day and slowly sinks after that. Birk found a greater variation and thinks that in artificially nourished newborn infants about onehalf of the ingested nitrogen is excreted in the urine as compared to one-sixth to one-seventh in the breast-fed. Nor was Birk able to recognize the purine bases except in large quantities of urine.

Acetone bodies may be present in the form of acetone in small amounts in the undernourished newborn, but diacetic acid and  $\beta$ -oxybutyric acid are never found.

Ten per cent or more of the nitrogen of the urine of the newborn breast-fed infant is due to creatinin. Urobilinuria has been found.

As to albuminuria Mayerhofer found that almost all infants show a slight quantity of albumin in the first days of life. This is greatest on the first to the third day and there may be traces in the second week. Immediately after birth the urine is almost always free from albumin.

Jehle thinks that this may be a lordotic albuminuria, since the child changes its kyphotic in utero position for a lordotic one at birth.

Franz and von Reuss have studied very carefully the question of albuminuria in the newborn. Their examinations were carried out on diluted, filtered, slightly warmed urine, on which the acetic acid test was made. To the filtrate of this was added a small amount of serum albumin and the potassium ferrocyanide test made.

Their experiments were carried out on 70 newborn babies, and in the great majoirty of cases in the first days of life an albumin excretion was found, but in the fœtal urine no albumin was found. In one-half of the cases there was a slight clouding with acetic acid; in one-third there was clouding after the addition of serum albumin; and in only one case was there clouding with ferrocyanide. During the first day of life the albumin increased in 68.5 per cent of the cases. They believe that the albuminuria is due to circulatory changes but do not agree with Jehle's idea of a lordotic causation, since in 5 cases where the child was placed in a posture simulating the position in utero there was no difference from the normal as to the presence and persistence of the albumin. Usually the albuminuria lasted about three days.

As regards sugar they could recognize no glycosuria, and they think that glycosuria in the newborn following the use of forceps occurs only in exceptional cases.

They also examined the urine for nitrates, nitrites, and indican. A test for glycuronic acid was made with Lunge's reagent — diphenylamin. In only 5 cases in the first days of life did they get negative results. They regard the presence of glycuronic acid as the result of irritation of the nourishment on a sensitive intestinal mucosa.

In testing for indican Jolles' modification of Obermayer's test was used. Of the 31 cases tested only 2 gave negative results. The strongest reactions for glycuronic acid and indican occurred during the irritation catarrh of the first days of life.

Gudden tested the *pupils* in the newborn in a sleeping infant, and found that the pupils dilate 2.2 to 2.5 mm. They dilate slowly on wakening and do not measure more than 3 to 3.5 mm.

Canestrini thinks that at birth the infant can hear. As to sensation of touch, temperature, and pain, a current of 10 ma. failed to show any increase of pulse or respiration. It reacts more to cold than to heat. The skin of the face, especially the lips, is the most sensitive. He could not determine a sense of smell. The sense of taste is very well developed.

# (d) HYGIENE AND NUTRITION

The articles of Clark and Fraser offer nothing new in the care of the newborn except the treatment of the cord as favored by Fraser. He believes in an early free application of alcohol, the cord being then covered with a powder consisting of salicylic acid, 15 gr.; boracic acid, 25 gr.; zinc oxide 2 dr., and starch to make an ounce. He endeavors to determine the relative values of the different methods of treatment of the cord.

Petermöller finds that in 795 cases treated by the application of sterile vaseline on dressings 15, or 1.7 per cent, showed some variation from normal. Of these, 5 showed granuloma and 10 infection. Later he improvised the following method: A clamp was applied close to the ring and left there for 10 to 20 minutes; the cord was then cut and dry dressing applied. In 98 cases of this sort no complications in the way of diseased conditions were to be noted, but in 18 cases there was hæmorrhage, of which 17 were slight and stopped with pressure, but in one case it was necessary to apply a ligature. He then tried this method together with tying of the cord. In 455 cases he had no hæmorrhage, and only 3 cases of umbilical infection. After trial with various antiseptics, the child being given the daily bath, it was found that the simple dry sterile dressing was equal to the best and that with it the cord separated as early as with any of the other methods — about 6 days. In cases where the infants were not bathed but simply washed, and a permanent dressing applied, the best results were obtained with infusorial earth — 4.5 days. He advises the following method:

Tie the cord a hand's-breadth from the body, bathe the infant and then tie the cord I cm. from

the body; apply a dressing thickly covered with infusorial earth, cover with dry gauze strips and place on binder; cover this with some impenetrable material; put on another binder; allow the binders to remain until the cord separates, and in place of the daily bath wash the different portions

of the body separately.

In regard to feeding the baby, Wolf advises that no food be given for the first 24 hours. During the second day the child is nursed once or twice in order that it may obtain colostrum to clear out the meconium — water is given. On the third day the child is nursed three times; on the fourth day four times; on the fifth day and the following days, every 4 hours in the daytime but never at night, the child being fed at 6 and 10 a.m.

and at 2, 6, and 10 p.m.

In regard to the nutrition of the newborn Jaschke believes that it is possible for 100 per cent of the mothers to nurse their own babies, but that it is necessary if one wishes to accomplish this to have a special person to care for all their needs. Of great importance is the colostrum. This cannot be replaced physiologically by milk of a Chemical differences are marked. The babies who get colostrum do better than those who do not, provided the babies are physiologically nourished; in spite of weight decrease the nitrogen balance is positive. As to the time of nursing he unqualifiedly supports the four-hour interval; that is, four times during the day and once at night. He believes in general that the interval between birth and the time when the child regains

its birth-weight is not a good criterion by which to judge of its condition, but thinks it better to take into consideration the general condition of the child.

It is interesting to note, however, that among those of his cases which attained their original weight between the seventh and twelfth days, the number was 10 per cent higher among those fed at four-hour intervals than among those fed oftener. It is not so much the rapidity with which the loss is regained but rather the steadiness of the gain in weight after it once begins that is the best criterion for estimating the normality of the newborn infant, so far as its nutrition is concerned. The uniform weight-loss in 100 varied from 1.5 to 17 per cent; in 89 of these it was no higher than 10 per cent. Abnormal losses of weight are usually borne without affecting the future development of the child.

In icterus neonatorum, in spite of the fact that the infants obtained as much food, the weight increase was much more gradual. In overfed infants one must be cautious about complete withdrawal of food because they often react with a very marked drop in weight. In every case in the first two to three weeks of life, overfeeding is much more to be feared than underfeeding.

As to undernourishment, the lighter cases need no special care; one should always remember in this connection the exudative diathesis. In Jaschke's cases he has never been able to discover the inanition fever, but thinks that all such fevers are due to slight intestinal catarrh.

#### II. DISEASES AND CONDITIONS PECULIAR TO THE NEWBORN

(a) ASPHYXIA

A peculiar form of asphyxia has been reported by Hjort. Death occurred in an 8-day-old infant 12 hours after the first symptoms of asphyxia. Autopsy showed that death was evidently due to asphyxiation. In the bronchi gray-white fluid was found which was unquestionably mother's milk. This may be a more frequent source of asphyxia in the newborn than has been suspected.

Manton in speaking of asphyxia calls attention to the fact that asphyxia of the "livida" type

may be due to intracranial hæmorrhage.

Much has been written about the treatment of asphyxia in the newborn. The procedure suggested by La Rue is certainly ingenious if it is attended by success. He designates it heartmassage. He used it in 9 cases, in 7 of which he could not perceive the heart-tones. All cases recovered. The procedure is as follows:

The infant is placed on its back in a basin filled with water at 110 to 112° F.; the body is completely covered with water with the head supported. The body is grasped with both hands, the thumb being on the anterior surface of the thorax. The thumb of the left hand should cover the third intercostal space almost against the border of the sternum, the right thumb being in the fourth intercostal space in the mammary line. Pressure with the right thumb empties both ventricles; then with the left thumb the auricles are emptied. This should be done alternately and at the rate of 100 times per minute.

Sakaki suggests the following procedure: After the mucus is removed from the throat, the child is grasped by the shoulders, the chest being projected forward, with the index-finger in the armpits and the thumbs propping up the chin. The child is then moved rapidly up and down 120 to 150 times per minute, the flaccid dependent portion of the child's body being held by an assistant. After the first inspiration the child is grasped by the feet and the mucus removed from the mouth. The same procedure is then gone through. This may be repeated several times; this is all done before the cord is cut.

Several pulmotors have been described for use in asphyxia in the newborn; for a complete description of these we must refer the reader to the originals. Fry, Edgar, and Engelmann have described different forms for use. Engelmann states that his apparatus and method of resuscitation is to be preferred to any other in cases of asphyxia neonatorum, and may be used with perfect safety.

Very interesting is the report of Paul and Jean Delmas. In three cases of asphyxia they used the method of Planchu. This consists of artificial respiration produced by pressure on the chest with the thumb which gives a passive inspiration at which time oxygen is forced into the lungs from a bag. In one of their cases oxygen was also given subcutaneously.

# (b) ICTERUS NEONATORUM

In regard to the effects of the various birth factors of icterus neonatorum, Bedier brought forth the following statistics in 37 cases of icterus and 35 normal newborn. In 19 cases the mothers of the icteric infants were primiparæ, and in 18 multiparæ; of the normal 14 and 21 respectively. Of the icteric, 18 were born at term and 19 were premature; of the normal, 26 at term and 19 premature. The weight of the icteric children in 18 instances was above 3,000 gms. and in 20 below; of the normal 26 times above and 10 below. The weights were given as follows: From 1,000 to 1,500 gms., 1 icteric and no normal; 1,500 to 2,000 grams, 3 icteric and no normal; 2,000 to 2,500, 8 icteric and 3 normal; 2,500 to 3,000, 8 icteric and 7 normal; 3,000 to 3,500, 12 icteric and 18 normal; 3,500 to 4,000, 3 icteric and 5 normal; above 4,000, 3 icteric and 3 normal. It is evident from these statistics that babies with small birthweight have a distinct tendency to icterus.

Jaschke finds that in all of his cases of icterus in the newborn there was reduction of the hæmoglobin and the red cells and therefore we must speak of a hæmatogenous element in the etiology of icterus neonatorum. Pironneau believes the

Schmitz finds that hæmoglobin values were lower the higher the degree of icterus. This held true also of the white cells but there was no difference in the proportionate number of the various white cells. Nucleated red cells were more frequent than in the normal infant.

Gorter, examining the blood, found that in 20 cases of icterus neonatorum resistance of the chromocytes to salt solution was not lowered; in some cases it was increased. He could not recognize hæmolysins nor amboceptors. In all cases he found bilirubin and lutein.

Maliwa examined the blood from the umbilical vein of the newborn for "hæmaties granuleuses" of Demel. This is done in the following manner: On a carefully cleaned, dried, and warmed coverglass is put a thin layer of brilliant cresyl blue solution, o.1 per cent alcohol. The coverglass with the drop of blood is gently put on this in such a way that the blood spreads out evenly and dissolves the stain.

The number of "hæmaties granuleuses" found in this way in the newborn was certainly greater than among adults, and this was especially true in icteric children where the number of this type was in excess of those found in non-icteric. definite boundaries can be determined but, as a rule, where the percentage in young children was less than 2 no icterus occurred. The increased number of these sank to normal in 2 to 3 or, at times, 4 days. The icterus begins with the rapid decrease of these cells in the blood. He thinks that by the rapid destruction of these cells there is a sudden increase of material from which biliary coloring matter may be formed which overtaxes the excretion energy of the liver-cells. So much in support of the hæmatogenous theory of icterus neonatorum.

Much of great importance has certainly been written in support of the hepatogenous theory. Hess, by use of his duodenal catheter in the newborn brought forth the following table:

No. of Cases	Age	No Bile	Bile	Marked Jaundice	
52	0.5 to 2 hours	51	I	0	
19	12 to 36 hours	51	4	4	
15	1.5 to 3 days	5	IO	6	
13	3 to 4 days	4	9	6	
12	4 to 5 days	2	IO	5	
13 .	6 to 11 days	2	II	4	

In 24 cases in which a careful study was made as to the relation of bile to jaundice, in not a single case was bile obtained previous to the appearance of jaundice. There was a marked parallelism between the amount of bile and the degree of jaundice. The ingestion of colostrum had no influence on the flow of bile. He sums up his results as follows:

Tests by means of the duodenal catheter show that bile is very rarely excreted during the first 12 hours of life; it was obtained but once in the course of 52 tests. Bile excretion during the subsequent 24 hours is variable; in cases of marked jaundice it is profuse; in cases not jaundiced it is scanty or absent. The function of excretion gradually becomes fully established during the first seven or ten days of life. Where jaundice manifests itself it precedes the excretion of bile into the duodenum. Secretion of bile varies within wide limits; in general it is marked when the jaundice is marked. The occurrence of jaundice results from a defective correlation of excretion and secretion. It is generally caused by the inability of the rudimentary excretion to cope with the sudden profuse secretion of bile. He believes this last is the basis for the appearance of icterus neonatorum.

This theory, while ingenious, must to a certain extent be discredited when the excellent investigations of Hirsch and Ylppö are considered.

Hirsch first tested the relation of the blood supply of the skin to icterus neonatorum. To do this she put a collodion dressing on the skin of the arm immediately after birth. In this way she was able to show that the area thus made anæmic showed no icterus. On removal of the dressing in a few hours the patch became hyperæmic and was more markedly icteric than the surrounding skin. From this procedure two other facts were brought out. First, that in the first 24 hours before icterus occurs the serum is more darkly colored, and, second, that this increased pigmentation of the serum is present during the first to third days in those children who show no icterus.

She examined the blood from the umbilical cord by means of Ehrlich's diazo-reaction with the following results:

I. She found that all newborn have more bilirubin in the blood than do adults or older children.

2. The concentration of the bilirubin at the time of birth varies between 1:30,000 and

The strength of this reaction in general is

parallel to the degree of the later icterus.

Besides these estimations the blood of 12 babies in the first hours and days of life were examined. The result showed that the bilirubin value remained high after the second or third day only when icterus was present. When there was no icterus the bilirubin content gradually declined. If the bilirubin content of the skin reached about 1:20,000, icterus was to be seen. The strength of the icterus probably depends to a great degree upon the delicacy of the skin and the water content of the body.

The findings of Hirsch are confirmed and amplified by Ylppö. He examined the biliary coloring matter not only in the blood but in various secretions by means of the spectrophotometric method which he devised for that purpose. By this method the two components of the biliary coloring matter, the bilirubin and biliverdin, can be estimated at the same time. By this means he determined the following facts: The biliary coloring matter in the fœtus is very small up to the last month. During the whole feetal period, however, the quantity of biliary coloring matter is strikingly small, about 33 milligrams. In the urine of the newborn biliary coloring matter is excreted and there is a certain agreement between the quantity excreted in the urine and the intensity of the icterus. With the beginning of independent existence the biliary coloring matter increases quite markedly. From about the sixth day on, a very great increase can be noted in the formation of biliary coloring matter in the newborn. In the first 13 days about 140 mg. are formed; in the icteric newborn about 0.5 per cent to 1.6 per cent of this is excreted; in the nonicteric child, at the highest o.i per cent. total excretion of biliary coloring matter from the body in icteric and non-icteric newborn shows no specific difference, and there is no agreement between the intensity of the icterus and the total excretion of biliary coloring matter.

As to the blood, the biliary coloring matter of the feetal blood is increased in comparison with that of the healthy adult. Those children, blood from whose umbilical cord showed a comparatively high bile content, practically always developed icterus, while those who had a strikingly small bile pigment matter in the umbilical blood, as a rule, developed no icterus. After birth the biliary coloring matter increased in every child; this increase lasted 3 to 10 days and rose with a varied degree of progression. Children in whom the biliary coloring matter in the blood passes a certain boundary for skin icterus become icteric. The intensity of the icterus of the skin showed an agreement with the bile pigment content of the blood. Premature infants show in general a very high bile pigment content in the blood. The increase usually lasts 6 to 10 days and the bile pigment content holds for weeks

above this boundary.

By clinical observations Ylppö was able to determine that icterus neonatorum is altogether independent of the presence of infection, either of enteral or parenteral nature. All living premature infants showed icterus, a great majority a very intense form which lasted many weeks.

Of 355 full-term newborn 80 per cent showed icterus of the skin. They were distinguished clinically from the children who showed no icterus only in so far that markedly outspoken icterus was accompanied by slight secondary signs characteristic of cholæmia.

Clinically three different forms of icterus neonatorum can be distinguished: icterus neonatorum simplex, icterus neonatorum prolongatus, and icterus neonatorum gravis. The connection between all these is recognized by transition forms and they may all be regarded as various

courses of the same affection.

As to the rôle which the placenta plays, he makes the following observations: "The human placenta allows the passage of no biliary coloring matter; the circulation of bile pigment in the fœtus and mother have two systems which are divided from each other. Of the biliary coloring matter circulating in the fœtal blood no quantities of any importance are deposited in the placenta." By animal experimentation he determined the following: The liver shows an especially high affinity for biliary coloring matter; it withdraws the biliary coloring matter circulating in the blood and excretes it in the bile; only a small portion is excreted in the urine. A resorption of bilirubin and biliverdin from the intestines could not be recognized.

Of the lower animals icterus neonatorum could be recognized only in the horse. Between horse and man one common characteristic is of importance and that is that bile pigment matter is

normally found in the blood of both.

As to the nature of icterus neonatorum he draws the following conclusions: (1) It is of purely hepatogenous origin; the hæmatogenous factor plays no rôle. (2) Icterus neonatorum rests on the fact that the liver of the newborn for some time after birth allows a distinct part of the biliary coloring matter to pass over into the blood. (3) Icterus neonatorum is therefore a uniform physiological phenomenon which at times can attain

pathologic strength.

In speaking of congenital familial jaundice, McGibbon remarks that it may appear as an isolated case, but usually affects several in the same family. The etiology is not known and syphilis is not absolutely excluded. The essential features are jaundice at birth or in 24 hours, large spleen, profound anæmia with few red cells, many normoblasts and megaloblasts. In his case the post-mortem showed small hæmorrhages under the peritoneum and in the lungs; a great increase in the blood-forming islands in the liver; the lymph-glands proliferative; the thymus

somewhat enlarged; the thyroid showed fibrosis; there was no colloid material in the kidneys, and no suprarenal cloudy swelling.

Fairise and Bonnet report a congenitally syphilitic infant with hæmorrhagic disease of the newborn, icterus, and septicopyæmia. There is nothing of special interest in this case.

# (c) SKULL INJURIES

Wilcox is of the opinion that skull injuries from forceps are often accompanied by intracranial hæmorrhages and injuries to the cerebral cortex or porencephaly. The first sign after such a delivery is a child apparently dead or with low vitality with signs of intracranial pressure. He advises operating early in these cases in order to try to stop the hæmorrhage. In regard to the treatment of skull depression, two absolutely opposite views are held: one, that all such depressions should be left alone; the other, that they should immediately be raised.

Gfroerer reports that in 5 cases of skull depression which were followed out to autopsy, in no case was the cause of death due to the depression. He states that in no instance has one of these depressions been shown to have a bad effect either upon the child's mental or physical development.

Hofmeier very strongly supports this view. In the Würtzburg clinic since 1895 there occurred 25 cases of skull depression; one as the result of spontaneous delivery and 24 occurred in extraction of the aftercoming head. Of these, 7 died shortly after birth. Autopsy showed marked bony fracture of the skull with intracranial hæmorrhage. In none of the 18 living cases are there marked symptoms from bone depression; of these 18, one could not be followed. Of the other 17, 5 died: 3 of enteritis in the first year, one of tubercular meningitis, and the other of a kidney disease in the eighth year. Of the remaining 12 all developed normally, both physically and mentally.

Hofmeier believes that symptoms of brainpressure in cases of depression of the skull are due, not to skull depression, but to intracranial hæmorrhage. He therefore feels that operative

procedure is probably of little value.

Contrary to this opinion is that held by Kosmak. He states that every depressed skull fracture should be immediately operated upon and he has devised a simple hook for this purpose. The point of this is introduced into the center of the depression, the handle is turned at right angles and steady traction is employed. As preparation the hair is clipped and a little tincture of iodine is applied. He reports three cases successfully treated by this means.

Soli also favors the correction of bone depressions. For this purpose he uses an instrument with a short screw-end and a large curved handle. In 20 cases which he has been able to collect from the literature treated with the use of this instrument, only 3 died. He reports three more cases with excellent results, all being apparently normal by the fifth day. In all these the symptoms of cerebral compression were relieved.

#### (d) OPHTHALMIA NEONATORUM

As to the occurrence of ophthalmia neonatorum, Harman reports the statistics of the London County Council, which shows the occurrence of 0.843 per cent in 100,830 births in 1911. This agrees very well with the figures 0.867 per cent in 12,680 births which Harman found in 1906 in a private investigation. Of 231 cases followed there were 218 cures, with 13 cases of impaired vision; of these 3 were blind: one was blind in one eye and the other eye was damaged, 4 blind in one eye, 2 had both eyes damaged, and 3 had one eye damaged. Of 278 cases noted, 17 died. Forty per cent of the mothers had vaginal discharge.

Tassius lays stress on the existence of non-gonorrhœal ophthalmia. Of 13,753 cases, 168, or 1.22 per cent, showed ophthalmia; of these, 58, or 0.42 per cent, were gonorrhœal, and 110, or 0.8 per cent, non-gonorrhœal. In the latter group the cornea was always clear. The treatment consisted in penciling the lids with 0.1 per cent sublimate solution every two to three hours. The worst case was one of pneumococcic infection which lasted three weeks. Of the gonorrhœal cases he states that they may often be infected after birth by the mother, but there seems to be little doubt that the gonoccoccus may remain latent. Of his 58 cases, 32 were late cases.

He gives the following table showing the effects of prophylactic and non-prophylactic measures, and advises the use of a 1 per cent silver nitrate. He has had little success with sophol.

No. of cases	Ophthalmia	Per Cent	Early Infec.	Per Cent	Late Infec.	Per Cent
13735	58 gon.+	0.42	26 32	0.19	32 78	0.23
Without Prophylactic 523	168 17 gon.+ 16 gon.—	3·23 3·08	58 8 6	1.53	9 10	0.80 1.70 1.94
With Prophylactic	33 41 gon.+ 94 gon.—	6.31 0.31 0.71 1.02	18 26 —	2.67 0.13 0.20	23 68 —	3.64 0.18 0.51 0.60

Sussmann, in 72 cases of blenorrhœa and blenorrhœal catarrh, found the Prowazek-Halberstädt bodies many times. They were always found in the protoplasm, and the nucleus was unaffected. Twenty-five cases were simple catarrh; 24 were cases of inclosure blenorrhœa of which only two showed gonoccocci and mixed infection. In 20 of these cases the time of onset was: on the second day 1; on the fifth 1; on the sixth 2; on the seventh 6; on the eighth 5; on the ninth 3; on the fourteenth 1; and on the fifteenth 1. The case which occurred on the second day was a mixed infection with the gonoccoccus. The incubation time of inclosure blenorrhœa is 5 to 9 days with an average of 7 days.

In conclusion he states that "inclosure blenorrheea" comprises nearly half of all blenorrheea cases. Clinically it may be distinguished by longer incubation period, different secretions, more marked tendency to hæmorrhage, insidious course, freedom of the cornea from involvement. Late infections are usually "inclosure blenorrheea." Simple catarrhs do not belong to this

picture.

Phillippi also gave some statistics in regard to blenorrhæa.

On the ground of 116 cases, Klebanski concludes that gonoccoccic ophthalmia lasts from 8 to 90 days with an average of 35 days. Cases which are seen in the first week heal, as a rule, in less than three weeks. Vaccine treatment in his hands has been without influence. The use of silver nitrate combined with ardysol 20 per cent lowered the corneal ulcers from 25 to 16½ per cent, the former figure being for silver nitrate alone.

The treatment of ophthalmia neonatorum has been quite freely discussed. Credé-Hörder urges the importance of educating the public by the use of posters, etc., and the obligatory instillation of silver solution in the eyes of all newborn.

Holloway thinks that prophylaxis should begin during pregnancy. He also urges that in instilling the solution into the eye immediately after birth it be done after thorough cleansing, and with avoidance of all trauma. He also urges that

hospital care be given.

Stephenson gives a detailed systematized article on the prevention and treatment of gonococcic ophthalmia in the newborn. He advises cleansing the eye with potassium permanganate, 1:3,000, or bichloride of mercury, 1:10,000. He frequently uses 30 per cent perhydrol (Merck). For instillation purposes he uses 25 per cent argyrol.

Several recent investigators have endeavored to determine the relative values of the different silver salts as preventives of gonoccoccic ophthal-Schweitzer did this by determining the effect of the silver salts on the web of a frog's foot to see, if possible, what effect the various salts would have upon the cornea and conjunctiva. With a 1 per cent silver nitrate solution he got a brown discoloration with black flecks which showed a more or less weblike structure, and the tissue was somewhat opaque. A 1 per cent silver acetate showed the same results. With a 2 per cent argentamine the black flecks were present, the web was not so marked, and the tissues were clear. A 2 per cent argonin solution showed about the same as argentamine but not so marked. With a 10 per cent protargol solution there were brownish black flecks but no web was noticed. With a r per cent collargol there was a slight diffuse brownish tinge. With a 5 to 10 per cent sophol and a 10 to 20 per cent argyrol there was no tissue change.

He examined the effects of these various salts on the capillaries in young fish and found that the effects corresponded to the above. If the silver acetate is neutralized by the use of a sodium chloride solution, it produces no tissue change and is strongly antiseptic; in addition its solution is stable.

Terson believes that the organic silver salts possess many advantages over the nitrates. As to bactericidal effect, a 10 per cent argyrol solution is equal to a 1 per cent silver nitrate, and the strength can be doubled or trebled without danger. A 5 per cent protargol solution is somewhat more painful than argyrol but just as effective. If the cornea is already involved, instillations of silver nitrate solution are dangerous.

Anlauff takes up the question of the use of sophol in the gynecologic clinic at the University of Greifswald. This consisted in an experiment with 700 babies treated with a 5 per cent solution renewed every eight days. The reaction was very slight and transient. Of the 9 cases of conjunctivitis which developed, 2 were gonorrheeal: one on the fifth day which healed in 12.75 hours, and one on the seventh day. Two were pneumo-coccic from purulent lochia infected with the same organism; one developed on the third day and one on the fifteenth day; both recovered. Five were irritation catarrh, the courses of which were very chronic. Of these cases only 2, according to his idea, can be attributed to ineffectiveness of sophol. In 68 cases, or 10 per cent, there was a slight irritation lasting from 3 to 12 hours after instillation. Of the o cases of purulent conjunctivitis previously mentioned, 5 were early and 4 late. Sophol must be kept cold and be given cold as it soon precipitates. It is less irritating than the usual silver salts and may therefore be used again at the end of five days.

Morax combined the ordinary silver treatment with vaccine therapy. Of 110 cases of gonorrhoeal ophthalmia treated with a 2 per cent silver nitrate instillation every other day, argyrol 20 per cent every hour, and washing with hot water, there were 15 ulcers with 9 perforations. In 6 cases vaccine therapy was used at first alone but two ulcerations developed and the usual form of treatment was applied. He advises against too much confidence in vaccine therapy in gonorrhoeal ophthalmia neonatorum.

# (e) HÆMORRHAGIC DISEASES

Under the heading of hæmorrhagic diseases we have included not only the ordinary hæmorrhages but also intracranial hæmorrhages. All, however, will be taken up separately under this heading.

The subject of hæmorrhagic diseases of the newborn has been one of general interest in the last few years, and in proportion to the amount of interest displayed a great quantity of literature has appeared upon this subject. Much of this literature consists of reports of one or more cases with a partial or complete review of the literature. Much too frequently the case has apparently been an excuse for writing a paper and has shown nothing of special interest.

A general consideration of the subject is taken up by Kelley and Modigliani. The reports show nothing new.

Joelsohn gives a detailed account of the clinical features in 8 cases which brings out nothing which was not previously known.

Fairise and Bonnet report a case of hæmorrhagic disease combined with icterus and septicopyæmia.

Von Reuss' exhaustive review is certainly deserving of our attention. He first takes up the question of the sources of the hæmorrhage and states that they may be due to rupture of the smaller vessels of the mucous membrane as the result of severe labor or outspoken asphyxia, or to erosion of these vessels. Hæmorrhage is much less frequent in the œsophagus than in the lower portion of the intestinal tract.

Vorpahl has reported a case in a child 3 days old in which melæna suddenly developed in four hours. The melæna in this case was a result of rupture of vessels at the cardiac end of the œsophagus. The vessel formation of this region resembled that of an angioma cavernosum.

Commandeur has reported a case where an ulcer 2.5 mm. in diameter was seen on the greater curvature of the stomach.

Clippingdale has reported a case of fatal hæmorrhage in a child one day old, in which there were small ulcers in the stomach and small intestines which he thinks were most probably due to bacterial infection.

Pinninger reported a fatal case in which there was an ulcer one-half inch from the duodenum.

Gallis has gone into the question of ulcers of the duodenum in the newborn and nursling. He discusses the theories, the embolic, infectious, and toxic causes so far as the newborn is concerned. The ulcers in the intestines of the newborn are practically always accompanied by melæna and characteristic of ulcers at this time is the severe degree of hæmorrhage. The diagnosis of ulcer of the duodenum in the newborn is extremely hard to make.

Lövegren, on examining 3 cases of melæna neonatorum, found only one in which ulcers were present macroscopically. He thinks all ulcers are secondary and have nothing to do with the

primary cause of melæna.

Von Reuss states that ulcers may occur in the ileum and cæcum. The number of ulcers may be many or few. These may be produced by bacterial infection through ischæmia or through emboli or bacterial thrombi, though this must be regarded as of very rare occurrence. He states that single ulcers are rather frequently found in the duodenum as well as in the stomach. also calls attention to the fact that melæna is very infrequently found in later life when gastric ulcers are present, and that in severe forms of melæna often no recognizable sources of hæmorrhage can be found. As to the cause of the condition he speaks of syphilis and states that no etiologic value for Gaertner's bacteria has been The ports of entry for septic melæna are many. They may come through the circulation by means of internal infection, etc., and they may be toxic substances of a non-bacterial nature. It is interesting to note in this connection that there is in all cases a change in the coagulation of the blood; in many cases there is also prothrom-There may be a localized disease of the vessels which gives a definite production of thrombokinase.

Hereditary influence seems to play a certain part. Interesting in this connection is the surprising statement of Bonnet-Laborderie who believes that in 3 cases of melæna neonatorum which were nursed by the same wet nurse, the cause was breast-milk which was relatively rich in protein and poor in fat and sugar. The author thinks it possible that the composition of the breast-milk was such as to irritate the bowel. One certainly must be very cautious, it would seem, in accepting the author's interpretation of these cases.

The most important work on the pathology of hæmorrhagic diseases of the newborn is that of Evarts Graham. After thoroughly reviewing the causes which have been ascribed to this condition, he comes to the conclusion that probably in these cases there is some common process which will account for all. He calls attention to the fact that the condition is very similar to that induced by lack of oxygen and also to the late chloroform poisoning in adults. He then experimented upon pregnant guinea pigs by administering chloroform to the mother several times before the birth of the young. By this means he was able to produce hæmorrhage in some of the animals. Interesting in one case was the production of a hæmorrhagic disease in the kidney, and a fatty degeneration resembling Buhl's disease in another of the same litter. Graham's ideas have so frequently been misunderstood that it would be well to quote in full his summary, which is as follows:

"Those conditions of the newborn characterized by hæmorrhagic tendencies, icterus, and fatty changes are probably all syndromes which may occur as the result of a number of toxic agents. All of them, however, have been produced in these experiments by the action of a single experimental agent. Thus a picture indistinguishable from that called Buhl's disease has been attained by the use of chloroform, as have also the diseases known as Winckel's, melæna neonatorum, etc. Chloroform is not held to be the only substance that has this power. It stands rather as one member of a group of agents the effects of which in general and in individual organs are similar to those caused by lack of oxygen.

"The essential features of these conditions have also been produced by direct asphyxiation of the fœtus. The suggestion is therefore made that in nearly all of these pathological symptom-complexes there is a deficiency of oxidation, general, local, or selective, thus bringing this group of diseases into the general category of eclampsia, pernicious vomiting, cyclic vomiting, etc. In human beings, chloroform and asphyxia must, in many instances, be the determining causes. There remain, however, other cases in which different factors are to be sought."

Von Reuss distinguishes two forms in the clinical picture; the early and the late. The

early form occurs rarely later than 4 to 5 days; the late form occurs during the second week and is almost always of a septic nature. In the early form may be distinguished two groups. In the first, or benign, there is very little disturbance of the coagulation of the blood. In the first meconium we often find blood. The stool is black-red, brick-red, or a chocolate color, and has an unpleasant odor. The number of stools is 3 to 4 daily and the blood excretion lasts from I to 3 days. This form occurs very frequently in premature children. Often the weight-curve remains unchanged and the presence of fever is unimportant. The causes of this form are vessel wounds and hæmorrhage as the result of hyperæmic erosion and, at times, septic and toxic hæmorrhages. The prognosis is generally favorable.

The second group consists of the hæmophilic form (not to be confused with hæmophilia) in which coagulation of the blood is reduced. hæmorrhage begins most frequently on the second day, but may begin as early as the first, but never later than the fifth. In this form there is vomiting of blood as well as melæna. The hæmorrhage is profuse, the stools are frequent and foulsmelling, and there is rapid anæmia with more or less icterus. The temperature is raised but this is usually transient; the body-weight drops. At times hæmorrhages are to be seen in the mucous membrane of the mouth, gums, nose, and also in the skin. The total mortality of all cases of melæna was about 50 per cent, while in those complicated with hæmatemesis it was as high as 83.3 per cent. Among 31,300 births, melæna occurred 27 times. The late form of melæna begins at the end of the first or in the second or third week of life. It is of septic origin and usually is an enteritis hæmorrhagica.

The so-called melæna neonatorum spuria is of importance if the hæmorrhage comes from the nose. Profuse epistaxis is one of the causes of hæmorrhagic disease of the newborn. The blood, however, may come from the birth passage of the mother, especially if it is vomited in the first day of life, or from wounds of her nipples, and in other cases it may come from the base of the skull, from lung hæmorrhages, or from wounds in

the mouth.

The treatment of melæna neonatorum may best be taken up under three heads: (1) medicinal; (2) serum; and (3) surgical.

Moore used paregoric in 4 cases, of which one

died and 3 recovered.

Vallois reports 2 cases, of which one died and the other recovered. These were given 2 drops of 1:1,000 adrenalin daily.

Audebert advises the use of adrenalin and gelatine. He reports a case of uncontrollable hæmorrhage from the umbilicus which began the fifth day.

Lövegren had the best results with a 10 per cent

solution of gelatine given subcutaneously.

Poursin advises the use of gelatine combined with horse serum.

Most remarkable is the report of McGowan who had 3 cases of melæna neonatorum of which 2 died and one recovered. In the latter case he used 4 to 10 ccm. of horse serum at different times, which was given by mouth.

Lespinasse has had much success with the use of direct transfusion. He states that in these cases (1) the hæmorrhage should be stopped; (2) lost blood should be replaced; and (3) infection should be overcome. He had 14 cases, none of which died of hæmorrhage, but 2 died of syphilis. The severity of the condition varied greatly. In one case the patient was practically moribund. He used direct transfusion from the radial artery of the donor to the femoral vein of the child.

Cooley advises direct transfusion, since it is impossible to determine what blood element is needed. For this purpose he uses the instrument

devised by Freund.

Vogt advises the use of a preparation of bloodplatelets which is known as coagulen. It is given intravenously in a 10 per cent solution in water or normal salt.

Comby has reviewed the entire literature but

offers nothing new.

In regard to the use of human blood serum Franz, Goldstine, Merckens, and Moore have all reported good results. In 13 cases Goldstine had two deaths, one of which was probably due to intracranial hæmorrhage since the cerebrospinal fluid on lumbar puncture showed blood. Franz obtained his blood serum from the umbilical cord. Serum obtained in this way is centrifuged and preserved with a few drops of chloroform. It may be kept in this way for several months.

Schloss advises the use of whole human blood drawn directly from the vein of the donor and injected subcutaneously. Where it is possible,

transfusion is preferable.

Two cases of hæmaturia have been reported. One by Amesse where the only finding at autopsy was uric acid calculus of the kidney; another by Bordot in a 3-day-old girl baby where the hæmaturia ceased in 3 days after the use of ergotin. He states that the cause in his case was probably syphilis.

In regard to metrorrhagia in the newborn, Gognitidge states that in 106 newborn less than 8 days old four cases of metrorrhagia were found. He thinks the cause is a temporary irritation of the genital organs due to substances elaborated by the placenta and liberated in the blood during labor, and he thinks the same substance may cause congestion of the mammary glands.

In autopsy of 5,998 children under 2 years of age Kowitz found that there were intracranial hæmorrhages in 16.0 per cent. He comes to the following conclusions: In both normal and artificial births, intracranial hæmorrhages or traces of them are found with decreasing frequency in the dura, arachnoid, ventricles, or brain sub-In no trifling number the subdural hæmorrhage gives rise to hæmorrhagic pachymeningitis (3.0 per cent of all children examined between 8 days and 2 years). From these changes children die most unexpectedly from pachymeningitis or other diseases against which such children have a poor resistance. There is probably a lesion of the brain which is concomitant with the hæmorrhage from the birth injury. children the condition which is common is not due to hæmorrhagic pachymeningitis.

Thibault has carefully reviewed the literature on the intracranial hæmorrhage of the newborn and reports 19 cases, all of which died. He makes the following statements regarding this condition:

"I. Meningeal hæmorrhage constitutes one of the most frequent causes of death in the newborn.

"2. These hæmorrhages are produced at the time of birth.

"3. They differ from the majority of meningeal hæmorrhages in the adult by the absence of previously inflamed encephalic membranes.

"4. They are frequently accompanied by subserous ecchymosis which possibly depends on hæmorrhagic diathesis.

"5. Death is usually rapid and can be delayed

only by lumbar puncture.

"6. The cause is the traumatism which the head undergoes in passing through the bony pelvis."

For early diagnosis of subdural hæmorrhage in the newborn Henschen thinks the most effective means is puncture of the subdural space through the large or small fontanelle; while in cases in which the hæmorrhage is in the region of the medulla, spinal puncture between the second and third cervical vertebræ is most effective. If the hæmorrhage is not too great these measures may act as very efficient therapeutic procedures. If the blood is coagulated the puncture may serve as a guide for operative interference. He reports a case of subdural hæm-

orrhage in the frontal region successfully treated by puncture and operation with removal of the clot. He advises attempts to drain the subdural hæmorrhage by the insertion of a comparatively large caliber cannula, point upward, between the parietal or occipital bones, and the removal of the fluid and coagulum found where possible.

Voron and Rey report a case of death in 12 hours, due to subarachnoid hæmorrhage. The authors regard an abnormal fragility of the vessel

walls as the cause of these hæmorrhages.

In 30 autopsies on the newborn infant, Leclerq and Papert found 13 cases of meningeal hæmorrhage and one of cerebral hæmorrhage. They conclude that in the fœtus at term these intracranial hæmorrhages are due either to obstetrical trauma or to a congenital toxic infection. In the premature cases the cause lies chiefly in the friability of the blood-vessels whose walls are not able to support the compression during labor. These hæmorrhages are in a certain number of cases accompanied by an extrameningeal extravasation of blood without dislocation of the vertebræ or fracture of the skull.

Manton reports 3 cases of intracranial hæmorrhage and emphasizes the importance of differentiating it as the cause of severe asphyxia.

Green reviews the subject at length and reports

autopsy findings.

Benthen reports 10 cases of intracranial hæmorrhage due to rupture of the tentorium. In all but one of these cases this was the sole cause of death. All the children were born spontaneously. He believes that such cases are due to sudden strong pressure applied to the head to relieve the perineum, which by pressing on the frontal bone places the tentorium on a stretch and tears it.

Eastman reports a case which was delivered by forceps; the child died on the seventeenth day. At autopsy hæmorrhage was found in the lateral ventricle and also between the pia and dura.

Abels reports two cases of ventricle hæmorrhage in the newborn. In the first cases there were hæmorrhages into all the ventricles of the brain, into the abdominal cavity, and into the suprarenals; in the lungs there was bronchitis with atelectasis. The clinical picture very closely resembled that of tetanus. In the second case the hæmorrhage was into the lateral ventricle alone; there were also hæmorrhagic erosions in the stomach. Abels thinks that the cause of the condition is overfilling and rupture of the veins of the choroid plexus during birth.

Very interesting are the findings of Gröne. In 4 cases he found a condition of epidural hæmorrhage in the spinal canal, in 3 of which there

were no recognizable causes of death. In one the tentorium was torn. In 2 cases of twins, one of each set was affected. Both of these cases had the following points in common: They were twin babies and relatively small weak children; the delivery was easy and spontaneous; there were no signs of trauma and no signs of syphilis. In each case the other twin survived. In all 4 of his cases the hæmorrhage was located beneath the dura and extended from the foramen magnum to the dorsal region, and was most voluminous in the cervical region. It was especially localized

about the sides and at the nerve-roots. No wound of the dura or fracture of the vertebræ was found.

(f) BUHL'S DISEASE

Luksch reports an autopsy in a four-day-old child, dead of Buhl's disease. He sums up the

findings as follows:

An acute intestinal catarrh was followed by a typical bacillus-coli bacteræmia which led to stoppage of the small vessels and to formation of thrombi in the large ones. This produced hæmorrhage and fatty degeneration.

# III. INFECTIONS

(a) GENERAL CONSIDERATIONS

In the general consideration of *infection* of the newborn von Groer and Kassowitz have taken up the subject very exhaustively and a short résumé of their work will hardly do justice to it, as this alone is a subject which requires exhaustive study. However, there are many points of special interest in their work and an attempt will be made to give these.

Infection of the newborn may be due to (1) germinal infection; (2) intra-uterine infection, of which there are two types: hæmatogenic and amniogenic; (3) infection during birth; and (4)

infection in the first days of life.

The possibility of germinal infection has been raised but so far has never been proved and the weight of medical opinion is against it. Intrauterine infection of hæmatogenic origin can occur by metastases from infection of the mother, as has been demonstrated with the typhoid bacillus, staphylococcus, streptococcus, and pneumococcus. It is doubtful whether influenza and cholera are carried in this manner but it is probably true that malaria is thus transmitted. Variola is certainly transmitted in this way; the mother with variola at the end of pregnancy can give birth to a perfectly normal child which later develops smallpox. Measles seems to be carried in rare cases, and possibly scarlet fever. There is no doubt that tuberculosis has been found to be transmitted in this manner but such cases are extremely rare, and tuberculosis of the placenta is by no means always followed by tuberculosis of the fœtus. Syphilis is most frequently transmitted in this way.

Amniogenic infection is of rather doubtful occurrence and is certainly rare. It is possible that by early rupture of the amniotic membrane the fluid may become infected from vaginal

bacteria.

The following conditions predispose to infection during birth: (1) premature rupture of the bag of water; (2) breech presentation; (3) physiologic trauma by which infection can enter the respiratory and gastro-intestinal tracts and the conjunctiva. It may be that aspiration of infected amniotic fluid is an important factor in the production of pneumonia. This may also result in infection of the middle ear through the eustachian tube and the extension of such infection to the meninges. The gastro-intestinal tract is probably a very important source of infection and the meconium is a favorable culture medium. mouth cavity soon after birth is seen to contain the same bacteria which are found in the vagina of the mother. Gastro-enteritis may occur as a result of infection of the meconium.

In the infection of the conjunctiva not only gonococci but other bacteria are involved; notably streptococci, staphylococci, pneumococci, and bacillus coli. In rare instances the skin may be infected. In certain cases of pemphigus neonatorum this is demonstrated. Infection during the first days of life may occur through the umbilical wound, and here the vaginal bacteria are of the

greatest importance.

The existence and development of infection depends to a large extent on the treatment of the umbilical cord. Tetanus may enter in this way; it usually begins on the fifth to the twelfth day; but by far the most frequent infection is that by the pus cocci. This can remain local or have a progressive phlegmonous character. Besides the umbilical cord, any epithelial defect can be the entry place for bacteria in the skin — pemphigus neonatorum simplex and dermatitis exfoliativa, also thrombi of the skin, and erysipelas. Mastitis in the newborn can come in this way. Infection through the mouth may be the source of the production of Bedner's aphthæ, and infection of the

salivary glands. True tonsillar diphtheria is extremely rare, but localization on the nasal mucous membrane is of more frequent occurrence.

In the respiratory tract there may be the usual pneumococci, perhaps rarely tuberculous pneumonia, and still more rarely bronchial gland tuberculosis. Infection may also enter through the gastro-intestinal tract, though the importance of such infection is not yet determined. Extremely rare in the first weeks of life are acute exanthemata. Measles is only found in the newborn whose mother has recently had the disease.

As to immunity, paternal transmission must be entirely disregarded. By animal experiments it has been proved that antibodies of various sorts pass through the placenta. This is true of agglutinins, precipitins, hæmolytic amboceptors, and opsonins. In all cases in which the serum of the mother animal contained antibodies these were transmitted to the offspring. This immunity of the offspring has a distinctly passive character independent of the method. In some cases the degree of immunity of the serum of the offspring may be higher than that of the serum of the mother. Anaphylactic reactions have been found

in the guinea pig.

As to the question of immunity in man typhoid agglutinins probably are transmitted. This also holds true for tuberculosis. As to acute exanthemata, it is altogether likely that the newborn is protected by antibodies for measles; this is also probably true for scarlet fever. It is interesting to note that where the mother has been vaccinated for smallpox, in the majority of cases it has been impossible to have a vaccination take on the newborn. As to the transmission of syphilitic immunity in the newborn there is some question. The mother and the child react to the Wassermann test independently of each other. Diphtheria protective bodies are to be found in the umbilical blood serum in from 83 to 84 per cent of all infants, so that diphtheria antitoxin may be regarded as a substance which physiologically passes from the mother to the child, but the ability to produce diphtheria antitoxin under normal conditions comes only in adult life.

As to trophogenic transmission of immunity, according to some authors there is an enteral passive immunity in infants. One can certainly deny the transmission of protective bodies for tuberculosis, and regard as doubtful the transmission of scarlet fever and measles antibodies. Many writers hold that the mother's milk brings natural immune bodies to the infant organism. The form of immunity peculiar to the newborn and the fœtus is that due to a deficiency of receptors.

Noack has examined carefully into the question of infection of the fœtus from the vaginal secretion of the mother. He states that there are two possibilities, one where the bag of waters ruptures early and the amniotic fluid becomes infected, and where it ruptures late and the child is infected during its passage through the birth canal. In the former condition the infected amniotic fluid may be aspirated or swallowed, or may even cause otitis media by passing into the eustachian tube.

The skin of the infant may be infected causing pemphigus, erysipelas, or gonorrhœal exanthema. The eye may be infected, causing gonorrhœal or other forms of ophthalmia neonatorum. The gonorrhœal ophthalmia in some cases has led to gonococcæmia with purulent arthritis. Infection may come through the nose and mouth producing pneumonia or otitis media sometimes followed by fatal meningitis, gastro-enteritis, pseudodiphtheria, stomatitis, and gonorrhœal inflammation of the mouth.

In 30 cases where the vaginal secretions of the mother and the mouth cultures from the child were bacteriologically examined there was a very definite agreement. Indirectly there may be an infection of the breast of the mother by bacteria from the child's mouth which came originally from the mother's vagina. Other locations of infection are the mammary glands, the umbilicus, the vulva and vagina, and possibly the anus.

He believes that the vaginal secretions have a much greater importance as infection producers in the newborn than simply as producers of ophthalmia neonatorum.

# (b) ACUTE

As regards ordinary infections with the pus organisms the following cases have been reported. David has reported a case of septicopyæmia of umbilical origin with phlebitis afflicting both lower extremities. This was followed by ascites. The umbilical infection was first noted 27 days after birth, the phlebitis 10 days later. The child died on the sixty-fifth day of multiple abscesses.

Azema reports a case of infection following vaccination in a baby 12 days old; the child was vaccinated on the first or second day; on the twelfth day osteomyelitis developed, and the child died on the thirty-second day.

Broca advises as a prophylactic measure to prevent *mammitis* in the newborn that a cotton compress be applied over the engorged glands; no medicaments are to be used. If inflammation appears hot dressings should be applied, and if fluctuation be present the abscess should be incised.

In examination of the relation of diphtheria protective bodies in the newborn to those of the mother, Kassowitz comes to the following conclusions: (1) The protective body content of the newborn against diphtheria toxin is in complete agreement with the content of the mother's blood in this material. This is found in 84 per cent of all mothers and newborn. (2) The rarity of diphtheria in the newborn is in close agreement with the immunity of the mother. (3) About 50 per cent of the serum immune parturients and normal women react positively to diphtheria The intracutaneous test with diphtheria toxin when positive therefore gives no conclusion as to the protective body content of the serum. (4) About half of the serum immune women are sensitive to the overneutralized toxin-antitoxin mixture. (5) Some women react positively to the toxin inactivated by boiling, but this reaction does not always correspond with the sensitiveness against neutralized toxin.

Groer, after elaborate experimentation as to the nature of the diphtheria protective bodies to be found in the umbilical cord, comes to the conclusion that they are completely identical with

the protective bodies of antitoxin.

In the course of an epidemic of *measles* Steinschneider saw a case in an infant 9 days old. The eruption was typical as were the symptoms and the course. The child recovered. The mother had had bromides in small doses the day before eruption appeared but this would hardly account for the typical measles as described.

Cockayne reports a case of whooping cough in an infant 5 days old. On the third day after delivery the mother developed whooping cough, the infection having been acquired from a son three and one-half years old. He cites several cases from the literature, many of which seemed to be

quite doubtful.

Gatti reports a case of pertussis which began on the fifteenth day of life; he saw the child 4 days later; the infection was acquired from a sister. The child died 12 hours after admission to the clinic in a state of apnœa following a paroxysm of coughing. In this case mucus from the throat showed bacilli like the Bordet-Gengou bacillus.

Wolff reports a case of tetanus neonatorum which recovered. The case occurred in a breast-fed baby 11 days old with an umbilical infection; the child showed typical symptoms of tetanus. One hundred units of tetanus antitoxin were given subcutaneously immediately about the umbilicus and on the next and second day following 100

units each were given, one-half intramuscularly and one-half subcutaneously. It was necessary to give bromides and chloral hydrate in order to reduce the spasms sufficiently so that the child could be fed by gavage. At 7 weeks of age the child had been completely normal for 14 days.

Leidenius reports a case of gonoccocic septicæmia in a newborn infant on the tenth day of life. Redness and swelling were noted about the right knee-joint, followed in a few days with involvement of the left elbow and mandibular joint. Puncture gave a thin pus which contained the gonococci. After about 8 weeks the functions returned and at 6 months the child was apparently normal, no ophthalmia was found clinically and no gonococci were to be found on examination of the conjunctival sac, mouth, or urethra. Three days after birth gonoccocci were found in the lochia of the mother; gonoccocci were found neither in the blood of the mother nor in that of the child.

Of 2,657 cases of *erysipelas* treated in the isolation hospital in Paris only one occurred in a child under one month of age, and this was by direct contagion from the mother. The usual location of erysipelas in the newborn is about the umbilicus. Oftentimes patches appear in different parts of the skin far removed from the original

location. Recovery is very rare.

Lereboullet and Moricand report a case of variola in a 14-day-old baby, the mother having developed variola the day before its birth. The first exanthem appeared on the fourteenth day on the trunk and limbs; the second 3 days later on the head, and shortly thereafter a third attack on the cheeks, tongue, and inner surface of the lips. The weight during 14 days remained stationary. The temperature at first was up to 39° C. but soon became subnormal and varied between 35 and 36°. Recovery began on the fourth day.

Brumpt and Tissier report malaria in a newborn infant. The attack was initiated on the eighteenth day with convulsions and fever. On the twenty-third day the malarial parasite was found in the blood. This was benign and of the tertian type; the child recovered. This was in all probability a true case of congenital malaria. The mother had developed malaria 4 months previous to the birth of the child, and the child was born in a portion of France absolutely free from malaria at that time of the year (October).

Concetti reports a case of malaria which developed on the second day after birth. This was a quartan fever. The child was given quinine

treatment and recovered. On three occasions after treatment had been begun it was impossible to discover the parasite. Four to five hæmorrhagic infarcts were found in the placenta. It seems that there may be a great deal of question as to whether this case was truely one of malaria.

Goebel reports a case of purulent *meningitis* in an infant 9 days old caused by bacillus proteus. Death occurred in 17 days. Agglutination of the infecting organism at 1:60 was seen. The

source of infection is unknown.

In taking up meningitis in the newborn Dryol reports two cases due to the pneumococcus; the first developed on the seventeenth day and the child died on the twenty-second day. The second case was in an infant o days old and the child died on the thirteenth day. In this case pneumonia was accompanied by hepatization of the bases of both lungs. In taking up the literature of meningitis in the newborn he has been able to collect the following cases: meningitis due to pneumococcus, 7 cases; to bacillus coli, 7 cases; meningococci, 2 cases; streptococci, 2 cases; lactisa erogenes, 1 case; syphilis, 3 cases; and unknown, 7 cases. He then takes up in detail the question of pneumococcic meningitis in the newborn. The diagnosis is to be determined by lumbar puncture. The course is extremely rapid - 1 to 5 days. No treatment is of any avail.

Fabre and Bonnet report a case of pneumococcic meningitis in a child 5 days old with death 4 days later. In their opinion this case was one of vaginal infection. The mother had a general febrile affection and the pneumococcus was obtained from the lochia. The maternal infection may have been localized in the uterus; at

least there were no lung findings.

## (c) CHRONIC

Fabre and Rheuter held autopsies on 67 newborn with the idea of determining the diagnostic value of the syphilitic epiphyseal lesions. They divided their cases into three groups. The first group consisted of cases of certain syphilis, of which 13 were positive, 2 doubtful, and 2 negative. In the second group were 23 cases of probable syphilis, of which 16 were positive and 7 negative. In the third group of 27 in which there were no signs of syphilis, 3 were positive and 2 doubtful. They believe that the sign of Wegner (syphilitic epiphyseal lesions) is of great value in the diagnosis of congenital syphilis. No microscopical report was published.

Sauvage and Gery, in an autopsy on a child dead on the fifth day of life, found large *gummata* in the lungs and liver. Only a few spirochætes were found in the substance of the liver and lung and in no other organs, but spirochætes were

numerous in the gummata.

Bonnet-Laborderie, in speaking of sudden death in syphilis, calls attention to the fact that in almost all of these cases there is an increase of the abdominal content either from ascites or enlarged organs — especially the liver and spleen — or from both. This he believes to be responsible for the acute asphyxia through pressure on the diaphragm. He later reported a case in which he acted upon this theory and removed 600 ccm. of fluid by paracentesis from the abdominal cavity of a newborn infant in a state of asphyxia. This restored regular respiration and on palpation of the abdomen a very large liver was found.

In regard to the technique of the Wassermann reaction in early life, Lesser and Klages, on examination of the umbilical blood from 1,280 newborn, came to the conclusion that the presence of "reagins" in the umbilical blood is indicative of spirochæte in the infant organism. The fact that the Wassermann reaction once positive tends to become stronger speaks for elaboration of the "reagins" in the infant body and not for their acquirement from the mother. Where Lesser's ether heart extract was used the Wassermann reaction always agreed with that of the mother; while with the fœtal liver extract this was frequently not the case. This difference occurred in almost half of the syphilitic newborn.

Roux states that a negative Wassermann in the newborn does not exclude lues. A positive reaction in the first 14 days speaks only with great probability for lues. If the reaction in the blood is negative and the infant has a paralysis of unknown etiology, the lumbar fluid should be tested. The blood should not be examined before

the tenth day.

D'Astros and Teissonière state that the proportion of positive reactions increases as the age becomes greater. In 84 infants less than one month old and weighing less than 2,500 grams, there were 73 negative reactions. This they regard as an argument against syphilis being an active cause of congenital debility. One might question whether such a possibility was justified in view of the fact that the Wassermann test is notably uncertain in young infants.

Grulee, after a review of the literature on the subject of laboratory diagnosis of syphilis in

young infants, comes to the following conclusions:

 There is no test which is proved to be pathognomic of congenital syphilis in the early stages between the birth and the development of

active symptoms.

2. The examination of the urine and the routine examination of the cerebrospinal fluid for globulin content and cells offers little evidence of value for the diagnosis of this stage of the disease.

3. The evidence as to the Wassermann reaction all goes to show the unreliability of the test

at this age.

4. The Lange gold chloride reaction on the cerebrospinal fluid offers some hope at present that the evidence obtained in this way may be of distinct benefit.

5. So far as may be judged from the luetin test at present reported, active treatment with mercury materially influences it, so much so that without mercurial treatment no case has as yet proved positive. It may be stated, however, that the Noguchi test has a distinctly negative value, inasmuch as in all cases not syphilitic the reaction

was negative.

As to the treatment of syphilis, a few articles have been written on salvarsan in the newborn. Chambrelent, after a review of the literature, comes to the conclusion that this method of treatment does not entirely replace the mercurial treatment. The direct method is the method of choice but must be used with great prudence. It is especially to be recommended when the skin lesions are severe or where mercury has failed. He prefers intramuscular or subcutaneous injection to the intravenous in the nursling. The maximum dose should be 10 to 15 mg. per kilo weight.

As to the effect of salvarsan treatment on the mother, Lemeland and Brisson come to the following conclusions: Salvarsan can be employed in pregnant women without danger of death to the fœtus or of producing premature labor provided small doses are given and repeated every few days, but massive dosage is dangerous for the mother and probably for the child. Salvarsan seems to favor the feetus in utero and its action is more beneficial the earlier and more energetic the treatment. The presence of a negative Wassermann reaction in the mother does not permit one to conclude that there is a non-infection of the fœtus in utero. Four women were given neosalvarsan; one gave birth to a dead fœtus, one child died on the second day of umbilical hæmorrhage; no spirochætes were found. The other

two children lived and both were well when last heard from.

Duperie reports a case where the mother during the seventh month of pregnancy was given 0.3 centigrams of salvarsan which had been preceded by a 40-days' treatment with proto-iodide of mercury. The child was born 6 days after the injection and died in less than one month of facial erysipelas. Spirochætes together with streptococci were found in the liver and suprarenals but

they were mostly atypical in form.

Möller reports a case of *tuberculosis* in a child which died on the third day. The temperature was normal throughout and there were no cyanotic attacks; respiration was short and labored and the child did not nurse well. The mother left the hospital well, but returned five months afterward with tuberculosis of the uterus, and died of miliary tuberculosis in two months. Autopsy of the child showed miliary tuberculosis of the liver and spleen, a tubercle in the pancreas, 2 typical ulcers in the ileum, miliary tuberculosis of the lungs, massive tuberculosis of the retroperitoneal lymph-glands, and a caseous mass in the thymus. Tubercle bacilli were found in the lesions.

Möller calls attention to the fact that the mere presence of tubercle bacilli in the blood does not prove the tuberculosis to be congenital since they might enter at the time of birth. Another source of infection is the swallowing of infected material such as amniotic fluid at the time of birth. True congenital tuberculosis is evidenced by infection through the umbilical vessels with tuberculous lesions in the liver and in the lymphatic glands about the hilus of the liver. To be certain that the case is congenital the child must die within 2 weeks and show characteristic lesions containing tubercle bacilli.

Grulee and Harms reported a case of miliary tuberculosis in a child which died on the eleventh day. This child showed throughout an irregular temperature. On the fifth day it had a convulsion which continued until death. The liver and spleen were found to be enlarged. At autopsy there was found caseous tubercles of the periportal and mesenteric lymph-glands, miliary tuberculosis of the spleen with caseous nodules. and a few scattered nodules in the liver, lungs, and kidnevs. The mother of this child had what was apparently only a healed tuberculosis of the hip. She had, however, a vaginal discharge of unknown etiology, and it is possible that the condition was similar to the case reported by Möller. The mother was alive several months after the infant was born

# IV. CONSTITUTIONAL AFFECTIONS

(a) HEART AND LUNGS

Hecht reports a case of *arrhythmia* showing on the electrocardiagram a curve similar to that of auricular extra systole. The arrhythmia disappeared on the seventeenth day of life.

Reano found purulent *pleurisy* together with bronchopneumonia in a baby 24 days old, which had a suppurative process in the skin. There was also a fibrinopurulent pericarditis. The streptococcus and staphylococcus were

isolated from the lesions.

Thaysen, in the obstretrical ward of the University of Copenhagen, in autopsies of III babies under two months of age, found pneumonia in 33 cases. Of the 99 under 10 days of age, 26 cases were found, or over 25 per cent. He thinks that in many instances a mistake has been made in designating the lung condition atelectasis, when, in fact, a true pneumonia exists. Frequently one finds only microscopically recognizable pneumonic areas in the upper lung. In only 5 cases was a bacteriological examination made and in all of these were gram-positive cocci. The pneumonia in these cases was not catarrhal but suppurative. He states one can distinguish in the newborn the following conditions:

r. The placental infection, including syphilitic, tuberculous, and probably also pneumococcic, and, in rare cases, streptococcic or staphylococ-

cic pneumonia.

2. Aspiration pneumonia acquired either through aspiration of the fetid uterine secretions or from purulent secretion from a pathological birth passage; also at times from a normal birth passage.

3. Aërogenous pneumonia, which is probably

extremely rare in the first days of life.

4. Metastases from umbilical infection or other external infections; these two are extremely

rare at this age.

Of these groups, unquestionably the most frequent are the aspiration pneumonias, and especially the form which is acquired through aspiration of virulent bacteria from the secretion from the birth passage of a healthy woman.

#### (b) GASTRO-INTESTINAL TRACT AND HERNIA

Lewin reports a case of purulent parotitis in an infant 14 days old. The right parotid was first affected and the left 12 days later. After the abscess was opened recovery was rapid. Staphylococci were found in the pus. He thinks the condition is probably due to deficient emptying of the parotid secretion. Von Reuss also

mentions a case of left-sided purulent parotitis in a newborn infant.

Brennemann has reported three cases of atresia of the esophagus. In reviewing the literature he finds that 75 per cent of the cases are of the type which he found in all three of his. This type is the same as that described by Richter. The birth-weights in his cases while usually described as low, were, respectively, 5 lb. 9 oz., 7 lbs. 12 oz., and 7 lbs.—an average of nearly 7 lbs. The three cases which he reports died in 9,  $7\frac{1}{2}$ , and 8 days. The cause of death is usually bronchopneumonia. As to weight, the loss in his cases amounted to 25, 30, and 40 per cent respectively, with nearly 75 per cent of this loss in the first three days. The temperature in each case showed a distinct elevation after the second or third day, though in one case the temperature dropped and was subnormal. Sclerema was a distinct feature. The meconium passed was not different from that of the normal infant. Attacks of suffocation and cyanosis were very frequent, especially when food and water were given. In one of his cases the epigastrium was distinctly bulging and tympanitic, doubtless due to the fact that the passage into the stomach through the esophagus to the trachea was open. He discusses the treatment in detail but nothing of value has as yet been devised.

Richter reports his experience in congenital atresia of the œsophagus. The site of the atresia is on a level with the bifurcation of the tract; there is complete separation of the two segments of the œsophagus; the upper segment ends below as a dilated pouch, and the lower segment joins the stomach at the cardia and communicates with the trachea or bronchi. All four of the cases operated upon were well-formed, fully grown infants. The symptoms consisted in—

I. Regurgitation at once of everything taken,

beginning with the first feeding.

2. Continuous discharge of saliva and mucus from the mouth.

3. Spells of cyanosis at frequent intervals, especially after feeding.

4. Crying or coughing tending to distend the abdomen.

5. Difficult respiration and marked respiratory retraction of the chest and abdomen.

6. Passing of the catheter into the esophagus disclosed a complete block 10 to 12 cm. from the gums.

7. Early rise of temperature with cough usually indicating pulmonary involvement.

The operation which he planned was as follows: First, the closure of the gullet; in this procedure no pouch must be left to accumulate fluid and no part of the œsophagus must be sacrificed. The thorax is next opened widely under positive tension and the œsophagus is isolated near the bifurcation of the trachea and a ligature is passed around it. The details of

the operation are as follows:
The child is placed under

The child is placed under a general anæsthesia by the intratracheal method, and, when the operators are ready to begin, a pad is firmly bandaged on the abdomen. Incision is made in the sixth right interspace beginning at about the angle of the ribs behind and extending forward two inches. The ribs are widely separated and a finger is inserted. A flat retractor is used to draw aside the lungs; the œsophagus is isolated and ligated, or better, the parts which were crushed with a heavy clamp are separated, cut, and both ends tied. In closing the chest a single pericostal suture is applied; gastrostomy is then done. He reports two cases, both of which died.

Lorenzini, in a case where the infant had failed to pass urine in the first 5 hours, gave an enema which removed from the rectum a gelatinous mass 10 cm. long and 2 cm. in diameter. The child died later of bronchopneumonia. This is the sixth case of mucous plug in the rectum reported in the literature, according to Lorenzini.

Von Reuss showed the meconium from a case of fœtal *enteritis membranacea*. The meconium is mixed with a membrane of mucus in which

cells are embedded.

Stamm reports a case in a newborn infant in which even after drastic catharsis no stool was passed until the eighth day. At that time a diarrhœa started and the temperature began to rise and death occurred on the tenth day. At autopsy necrotic areas were found in the lower third of the small and the upper half of the large intestine. The wall of the intestine was in many places covered by a thin easily removable fibrinous membrane. He designates the condition enteritis necrotica of the newborn.

Henneguier, in reviewing the subject of intestinal occlusion in the newborn, states that it can be due to deformities, to obstruction by a compact hard mass of meconium, to compression, and to abnormalities of position such as hernia. If after 36 hours there is no evacuation of meconium after flushing the bowel the diagnosis may be made. This is especially true if the other characteristic symptoms of intestinal obstruction be present. Surgical treatment consists in

removal of the obstruction, anastomosis of the bowel, rectal implantation, and artificial anus.

Vaccari reports successful operation on a newborn infant for right *inguinal hernia* which contained a ruptured appendix. Drainage was instituted and recovery took place in 10 days.

Remsen reports a like case in a child 16 days old which was brought to the hospital because of persistent vomiting and red stools; a tender lump was felt in the right inguinal region. Operation disclosed an acute appendicitis in a hernial sac. Recovery was prompt and uneventful.

In regard to the dressing of *umbilical hernia* in the newborn, Smester favors a simple adhesive without the use of button, cotton, or other material. The sides of the ring are to be carefully approximated before the plaster is applied.

Whitlocke reports two cases of strangulated hernia in the newborn, one in an infant 22 days old in which no stool was passed for 5 days. In the sac were found the right ovary and tube and a small loop of the small intestine. At operation no resection was done and the child recovered. The second case was in a child 17 days old; no stool had been passed for 4 days. The sac contained part of the cæcum with part of the appendix. The appendix was removed and the cæcum returned to the abdomen. Recovery was complete and rapid.

Vogt reports a case of *intestinal obstruction* in an infant which died on the fourth day and which at autopsy showed a *hernia duodenojejunalis* 

together with bronchopneumonia.

Vannessen collected 24 observations of diaphragmatic hernia in the newborn. The condition is four times as frequent on the left as on the right side. Among the most frequent hernial contents are the small intestine, the liver, and the stomach; then the large intestine, spleen, and pancreas. Diaphragmatic hernias may be divided into two groups: embryonal and fœtal. The embryonal or false are without a sac and are never anterior. The fœtal or true have a sac and have no special point of election. The diagnosis is based on difficulty in respiration, a peculiar cry, cardiac dullness with beat to the right, intestinal resonance on the right or left side of the thorax, penetration of air sucked into the intestinal canal with borborygmus. Prognosis is very grave and treatment is of no avail.

Wetterdal reports autopsy findings in a case of diaphragmatic hernia of the false variety on the right side. In the statistics from two Stockholm hospitals he finds accounts of 17 cases of diaphragmatic hernia in 39,403 newborn, a percentage of 0.043 per cent. The false hernia

is 7 times as frequent as the true, and the rightsided 6 times as frequent as the left-sided. He has collected from the literature of the true variety 10 cases of right and 20 of left diaphragmatic hernia; of the false variety, 49 right and 302 left.

In a case of septicopyæmia due to streptococci Mensi found multiple abscesses of the liver together with cerebral abscess. The symptoms began on the fourteenth day and the child died

on the twenty-first.

Epstein reports a case of congenital atresia of the bile-ducts; the child died at 6 weeks. At autopsy the atresia was shown to be a closure of the distal end of the common duct. The condition therefore offered some chance of relief from

operation.

Ylppö reports at length two cases of congenital closure of the bile-ducts in both of which the Wassermann reaction was negative. In one the upper part of the cystic duct and common duct were closed and there was a cherry-sized cyst filled with bile in the other. There was aplasia of all ducts. In regard to the question of the nature of this condition he thinks it is fair to conclude that the cause of this malformation lies in the embryo or is produced through the persistence of the fœtal physiologic epithelial occlusion. In the metabolic experiments carried out in these cases he found that 63.5 per cent of the ingested fat was retained and 73 per cent of the fat was split. There was no lipuria. Of the bilirubin given per os no recognizable quantities were absorbed and it was quite remarkable how small the quantity of biliary coloring matter was which was excreted in the urine.

#### (c) NERVOUS SYSTEM

Heim calls attention to the fact that many newborn are physiologically *hypertonic*; the babies lie almost in opithotonos, the head is drawn back and the extremities are in marked flexion. The muscles feel hard but there is no increased electrical irritability. The shape of the head in these cases is usually a dolicocephalus. For weeks and months it is extremely difficult to feed these babies in such a way that they gain. The length growth is not affected. The weight increases later if a food rich in albumin is given with the breast milk. These infants vomit easily. As weight increases hypertonicity decreases.

Krüger and Franke report a case of acute *tetany* with death on the second day after birth. They regard the case as due to septic infection. Streptococci were found in the intestine. A complete autopsy was not possible.

Dunoyer has taken up the question of tetaniform convulsions in the newborn. He states that in the newborn there are found generalized convulsions, permanent contractures with trismus, opithotonos, and paroxysmal spasms. Examination of the electrical irritability will determine between tetany and tetanus. Lumbar puncture will eliminate cerebral and meningeal conditions. The thesis contains a review of the subject but nothing new.

Von Reuss showed a case of clonic twitchings of the right side of the body, a result of brain trauma. The twitchings began on the third day with an attack of cyanosis. The child vomited and had to be fed by gavage. Convulsions ceased on the seventh day after the use of chloral. Lumbar puncture gave a clear fluid. It is interesting to note in this case that the child

had a left-sided purulent parotitis.

In determination of eye paralysis in the newborn, Bartels observed that in "rotation" of infants immediately after birth there was no rotation nystagmus but only the first phase, the slow opposite movement of both eyes; if either eye fails to follow through this movement there

is a paralysis.

He reports a case where the left eye never followed past the middle line; later, this phenomenon disappeared to a large degree; i.e., after true rotation nystagmus developed there was less difference between the two eyes. He concluded that the infant had an affection of the left abducens. The birth was a severe one and he thinks it likely that this was a hæmorrhage into the abducens nucleus. To elicit this sign one holds the child in the arm and swings to the left, then back to the right. The head of the child must be so held that it will not turn in the opposite direction and at the same time one eye must be held open.

Peltesohn lays stress upon fracture of the upper end of humerus in cases of *birth paralysis*. In the last six years he has seen 9 cases due to

this cause.

Lundsgaard reports an autopsy on a case of syringomyelia in a child which died at two months. The child had no legs and but one arm. The spinal cord findings were: (I) a widening of the central canal; (2) a marked development of the hyaline connective tissue which carried vessels from the pia to the medulla; (3) a longitudinal defect in the medulla which in part was filled with blood-vessels and connective-tissue masses; (4) a slight thickening and sclerosis of the pia; (5) sclerosis and thickening of the adventitia of the vessels of the pia and medulla; (6) dilatation

of some of the perivascular lymph-spaces and obliteration of others — distinct lymphostasis in the medulla. The internal organs showed no signs of disease and no syphilis was seen. This therefore must be regarded as a true hydromyelia of congenital origin, and is without doubt a malformation anomaly.

Klotz, analyzing his cases of mental deficiency, regards birth trauma as an etiological factor. Of 144 cases which he had had in five years there were 19 which showed abnormal births. Of these, 8 were protracted labors, 3 asphyxia, and 8 forceps. After excluding those with hereditary taint, there remained 5 protracted labors, 2 asphyxia, and 4 forceps. These were divided as follows:

Of the idiots, 2 protracted labor, 2 asphyxia, and 1 forceps; of imbeciles, 3 protracted labor, and 2 forceps; epilepsy, one forceps. Therefore, 11 children, or 7.6 per cent, were affected without any other factor being involved. He concludes from this that birth trauma is an important factor in mental development. His remarks in regard to Little's disease are especially interesting; not a single case was encountered in this series, and in none of 18 cases of Little's disease which had come to his experience was the child premature.

# (d) GENITO-URINARY SYSTEM

An examination of the vaginal bacterial flora in the newborn was undertaken by Schmidgall. Among 13 cases 10 were sterile on the first day. In the vaginal secretion of 21 newborn, streptococci were found 20 times; staphylococci 16 times, bacillus 12 times, and colon-like bacilli 10 times; micrococcus tetragenus 3 times; saccharomyces twice; staphylococcus parvulus 4 times; bacillus hæmophilus 3 times; bacillus bifidus twice and the vaginal bacillus of Döderlein 11 times. His conclusions are:

 The vaginal flora in newborn girls is in great part dependent on the vaginal flora of the mother.

2. Even in the newborn pathogenic microorganisms are the chief part of the vaginal bacteria.

3. The vaginal secretion of the newborn and up to the end of the first year offers a favorable medium for the development of the various strain characteristics.

4. The acid reaction of the secretion does not exert a sufficient bactericidal influence to kill the pathogenic microörganisms.

5. The influence of the intestinal bacteria on the vaginal flora is slight.

Mayerhofer, in a case with defect of the skull and spina bifida, finds a *uterine prolapse* due to weakness of the pelvic muscles.

Paola reports bilateral cystic ovaries in a child which died a few hours after birth. On the right side was a small double serous cyst involving the whole ovary and spontaneously ruptured. The small cyst on the right side was due to exaggerated development of the two graafian follicles. The left cyst wall was made up of thin ovarian tissue. The center was traversed by trabeculæ of tissue which was epithelioid in type.

Valmale and Payan report a case of double orchitis and epididymitis in a baby 7 days old. Death occurred on the ninth day. At autopsy infection was found about the umbilical vessels with marked involvement of the testes. There was no other focus of infection. The streptococcus was isolated.

#### (e) SKIN

There have been several reports recently on pemphigus neonatorum. Biddle reports an epidemic of 12 cases in which there were no deaths. The disease extended to mothers and nurses. In two cases staphylococci were cultured from bullæ, and in one case the blood showed the same organism. The vaccine made from one case and used on the same case gave a violent toxic reaction rash.

Reinhardt reports an epidemic of 23 cases extending over six months which defied the strictest quarantine and precautions. There were 3 deaths, one of pneumonia. Examination of the content of the bullæ showed staphylococcus; in some cases short-chained streptococci. Cytologically, cells of the type of large mononuclear leucocytes were most numerous. Very fine acidophile granules were shown by Giemsa's stain in all preparations. Pathologically the changes were those of sepsis.

Cole and Ruh examined very carefully a series of 9 cases. These proved very infectious and they finally had to close the hospital in order to stop the spread of the disease. In one case in which staphylococci were obtained from the blood, death occurred in 12 days.

The authors do not believe that the condition is the same as impetigo contagiosa because the latter is caused by streptococci, though some rare cases in adults closely resembling impetigo seem to be caused by the staphylococcus; these, however, are always of a mild nature. They believe that Ritter's disease (dermatitis exfoliativa) is only a malignant form of pemphigus neonatorum. Quite contrary to the experience

of Biddle, they obtained excellent results by the use of autogenous vaccines. All cases except the first were treated by autogenous vaccine and all recovered in a strikingly short time after its use. A dose of 5,000,000 was used and it was repeated if necessary.

Hofman concludes, after his study of pemphigus, that pemphigoid appears to be a staphylococcus infection. It has an etiologic relation to clinical and bacteriological impetigo contagiosa which heals with brown scars and has a location different from that of the streptococcus form. In older children there are serous blebs in combination with a staphylococcic pyodermia. Pemphigoid may go over into Ritter's dermatitis exfoliativa and speaks for an etiologic indentity for the two diseases. Further researches are needed to determine whether, as appears in his cases, the staphylococcæmia eventually becomes malignant in both diseases.

Sorgenti reports two cases of dermatitis exfoliativa, the first of which died at the age of 62 days, the disease having lasted 50 days. Blood culture showed staphylococcus aureus; this was agglutinated by the blood of the same baby in a dilution of I to 40. He thinks that one must consider the dyspeptic state of the baby, possibly in the rôle of promoting absorption of poisons through the gastro-intestinal tract. Such poisons would not be neutralized by the liver because of the age of the child and hence would be eliminated partly by the skin; there must also be a congenital debility of the skin. In the first stage of the disease the general state was not disturbed and there was no fever. Later there was rapid loss, irregular fever, and death in a condition of cachexia.

In the second case the disease began on the fourth day. Examination of the skin in an apparently healthy portion showed that the corneal layer was altered, in some places reduced to a detritus, in the midst of which leucocytes were seen which stained intensely with hæmatoxylin. The corneal layer had a tendency to become detached from the granular layer and in places the granular layer seemed to be modified. He thinks that in the etiopathogenesis in these conditions, alcoholism of the parent, especially the mother, should be considered.

In conclusion he states: (1) Dermatitis exfoliativa neonatorum, in the present state of our knowledge from a clinical standpoint, frequently begins with a general picture of an acute pemphigus neonatorum of a very grave variety. (2) It differs from pemphigus in that it is produced not only by a parasitic cause but by causes of a toxic,

irritative, or mechanical nature. (3) The histopathologic alterations of the skin can vary greatly in intensity and depth according to the various conditions in which the patient may be found. One must regard as an essential predisposing cause the congenital debility of the skin. (4) Dermatitis exfoliativa neonatorum is a very serious disease but not absolutely fatal. (5) The disease is rare in Italy.

While admiring the ingenuity of some of these ideas, one must question whether after all, as most authors think, dermatitis exfoliativa is not simply a staphylococcic infection of the skin of a

greater severity than pemphigus.

Sperk reports 11 cases of which 3 lived and 8 died, a mortality of 70 per cent, which he regards about the average. In one case he was able to propagate the staphylococcus from the blood.

In addition to these cases he reports 4 others of a similar nature. One began as a pemphigus and later proved to be an *erythroderma desquamativa* (Leiner). In one case there was some question as to whether it might have been a form of dermatitis exfoliativa. In another case the diagnosis was in doubt but the skin condition was probably due to an excessive sweat secretion. The fourth case was one which showed a dermatitis exfoliativa complete in every respect except that nowhere were there to be found bulle formations or their remains. For the last two cases he suggests the name "exfoliatio lamellosa neonalorum."

In conclusion, Sperk suggests that we take into consideration the characteristic physiologic consistency of the skin of the newborn, strong sweat secretion and the loosening of the upper epidermic layers, and the simple epidermolysis leading to an extensive separation of the upper layer of the epidermis. This is more than physiologic saturation of the skin. The dermatitis exfoliativa of Ritter is an inflammation of the skin confined to the epithelial layers. In the more marked cases of sweat secretion there is shown a rapid progress along the surface skin, and, through the absorption of poisons and the introduction of bacteria into the body, may lead to septicopyæmia. experience has taught, healthy newborn infants with good vascular skin are more subject to the dermatitis exfoliativa. In all of his cases, both microscopically and by culture, he was able to find staphylococci in the bullæ. In one case the staphylococcus pyogenes albus was obtained from the blood. He thinks that dermatitis exfoliativa of Ritter belongs in the group of staphylococcus pyogenes pyodermias; therefore he believes it contagious and that the cases should be isolated.

Alfes has found 2 cases of scleroderma of the newborn reported in the literature. One was a case reported by Haushalter and Spillmann where the left lower extremity was atrophic and on this there was seen a band of scleroderma. The other case was one reported by Cruse in a child 3 weeks old where the patch of scleroderma was on the back. This case resulted in recovery. The result of the first is not noted.

Mayerhofer reports 2 cases of scleroderma in the newborn with lesions on the back, buttocks, thigh, and upper arm. In the beginning the skin was bluish and gradually became hard. There was no disturbance of general findings. Pirquet and Wassermann were negative. According to Mayerhofer only 6 cases have been described in the newborn.

Lutz reports a case of congenital hydrops in a stillborn infant. The mother was markedly cedematous but after delivery made a quick and complete recovery. Examination of the feetus showed no signs of syphilis. Microscopically there were found marked accumulations of cells such as to suggest the picture of myeloid leukæmia. These were especially noticeable in the thymus and the rectal vessels as well as in the placenta. Nucleated red cells were present in abundance.

He states that these cases of hydrops must be divided into two classes: those with severe blood alterations which suggest leukæmia, and those without blood alterations.

Lahm reports a typical case of congenital hydrops with generalized cedema of the skin and serous effusions in the peritoneal, pleural, and pericardial cavities with enlargement of the liver, spleen, and heart. Spirochætes were found in the liver and lungs. Osteochondritis was present, also pneumonia alba. In spite of the opinion to the contrary that hydrops is not a condition caused by syphilis, Lahm thinks that this case may certainly be classed as due to the spirochæte. He thinks that in the causation of the condition not only mechanical factors but chemical and toxic substances must be considered. These latter affect the kidneys and blood-making organs and may be produced by syphilis as well as by any other condition of a toxic nature.

Fleischmann and Wolf report a case of partial hydrops in a child which died 24 hours after birth. This child had also a very marked hæmorrhagic diathesis. Paracentesis of the abdominal cavity and withdrawal of the fluid relieved the asphyxia. At autopsy the child showed ascites, the pleura were free, there was cedema of the pia with slight hydrocephalus, and the brain was soft

and œdematous. That the mother had syphilis was not regarded as an etiological factor.

## (f) THYROID AND MISCELLANEOUS

Remy and Fairise report an autopsy on a 2-day-old baby. The child came from a goitrous family. Death was due to asphyxiation of which the first attack occurred a few hours after birth; repeated attacks continued to occur at irregular intervals until death ensued. At autopsy a large hypertrophic thyroid was found, the two lateral lobes of which met behind the œsophagus. The trachea was somewhat compressed. Microscopically there was found an adenomatous increase with venous engorgement.

They also report another case which died in a similar manner on the second day. In this case the trachea was compressed by the anterior and inferior portions of the thyroid gland. The thymus was normal in size. The thyroid enlargement was due to true hypertrophy. The mother, who was born of goitrous parents and came from a region where goiter is endemic, had a parenchymatous goiter.

Bardin reports a case of congenital goiter, which at first was a cause of severe asphyxia, but hyperextension of the neck made breathing easier. Within 4 days the gland was reduced to half its original size and respiration was free.

Meisels reports a case of congenital goiter with enlargement of the thymus in which there was some obstruction to breathing.

Unger reports a case of congenital myxxdema and mongolism, all of the symptoms of which were easily recognized at birth or very soon thereafter. Only two similar cases have been previously reported. It is altogether likely that the two conditions may occur together rather frequently but one or the other or both are in the modified form. Peculiar in this case is the fact that in the short bones of both wrist-joints two distinctly recognizable bone nuclei were to be seen in the X-ray picture, which probably speaks for the mongolism.

Hochsinger reports a case of congenital oxycephaly. In this case, contrary to the usual condition, the sagittal suture was wide open while the coronary suture was almost completely calcified. The congenital calcification of the coronal suture produced a complete cessation of growth in the two parietal bones. A high grade exophthalmus was present.

Goldberg reports 7 cases of torticollis in the newborn. From these she draws the conclusion that this condition is not due exclusively to obstetrical trauma. Where obstetrical trauma

has existed, the degeneration of Zenker with hypertrophy of the connective tissue has been found. The traumatic lesions are favored by

the pathologic state of the muscle.

Joffe reports an autopsy on a boy who died when 2 days old. The mother had a severe hydramnios. Anatomical diagnosis showed extensive lung atelectasis, œdema, hyperæmia, ascites, cavity of the liver, characteristic intima changes in the pulmonary arteries, uric acid infarct of the kidneys, rupture of the tentorium, with hæmorrhage at the base of the brain. In the aorta and body arteries there was found a necrotic process involving the inner portion of the media and especially the muscle-fibers in which calcification had occurred. The elastic tissue was largely destroyed and in part calcified. According to Joffe the findings agree with those produced by adrenalin poisoning in animals.

Winkler reports the removal of a tumor the size of a child's head from the abdomen of a baby 7 days old. The tumor was an intraperitoneal teratoma and had no intimate connection to the organs of the abdominal cavity. Recovery followed.

Fitzwilliams and Vincent report a gangrene of the right leg in a boy 11 days old; this progressed and the leg was amputated 24 days later with complete recovery. The cause of the condition was not found. There was no injury, no frost bite, and the Wassermann tests were negative. Close to the dead area there was found a slight thickening of the endothelium of the vessel walls.

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# ABSTRACTS OF CURRENT LITERATURE

# GENERAL SURGERY

# SURGICAL TECHNIQUE

#### ANÆESTHETICS

Smith, G. G.: Spinal Anæsthesia in Urology. Interst. M. J., 1914, xxi, 1189.

By Surg., Gynec. & Obst.

Smith reviews the literature on spinal anæsthesia and considers at some length the chief dangers of this method. The greatest danger, he believes, is due to the oftentimes marked fall in blood-pressure which accompanies its use. He reports a fall of 100 millimeters of mercury occurring within twenty-

five minutes. Aside from its influence on the vasomotor system, spinal anæsthesia has no injurious effect upon the important organs, and is therefore particularly indicated when the kidneys are damaged.

The report of the results of spinal anæsthesia in 100 urological cases operated upon at the Massachusetts General Hospital shows that there were no deaths directly due to the anæsthetic. The method gave the greatest satisfaction when employed for cystoscopy in cases of tuberculous cystitis.

## SURGERY OF THE HEAD AND NECK

#### HEAD

Infroit, C.: Radiography of the Cranium; New Arrangement for Immobilizing the Head (Note sur la radiographie cranienne; nouveau dispositif pour immobiliser la tête). Bull. Acad. de méd., Par., 1914, lxxi, 872. By Surg., Gynec. & Obst.

In radiography of the cranium it is absolutely essential that the head should be in such a position that the median sagittal line is parallel to the plate. In a radiograph of the leg, allowance can be made for a deformity of the image, but the slightest deformity in a radiograph of the head makes interpretation impossible, and may have serious consequences. In his experiments the author fastened two rings on opposite sides of the head, placing them absolutely symmetrically over the temporal regions. The normal ray passed through the center of the rings and through the posterior clinoid processes; if the rings were superimposed in the picture it showed that there had been no deformity.

Experiments in varying the position of the tube showed that a change in position of the tube did not affect the verity of the picture if the tube was 70 cm. from the plate, but if the head was inclined as much as 1 cm. in either direction there was a distance of 4 cm. between the centers of the circles, and the image of the sella turcica was markedly altered.

The author has devised a means of keeping the head motionless. He covers a metallic plate with dentist's wax and takes an impression of the patient's mouth. This hardens and when the picture is to be taken the impression is placed in the patient's mouth, and the plate is fixed by the aid of two screws to a very firm support that is fastened to the

floor. The support, the plate, and the tubecarrier are placed absolutely parallel to each other. With this arrangement a perfectly accurate image of the sella turcica can be obtained. A. Goss.

Haubold, H. A.: Traumatic Aphasia. Surg., Gynec. & Obst., 1914, xix, 669. By Surg., Gynec. & Obst.

The clinical picture presented was unique in that the history of trauma was vague; that is, as regards severity; there was no disturbance of consciousness and the symptomatology was restricted to a complete motor aphasia and ecchymosis in the region of the left eyeball. Additional help was obtained from the findings by the ophthalmoscope, which revealed changes in both discs, slightly more marked on the left side.

A radiogram showed a small linear fracture of the skull on the side opposite to the apparent brain injury (bursting fracture). At no time did the picture of general cerebral compression obtain.

The skull was opened over the motor area by fashioning an omega-shaped scalp flap. A Doyen drill and burr were employed for the primary exposure, and the opening was enlarged with a biting forceps.

No lesion was apparent until the dura was opened when two ounces of thick semi-fluid blood escaped. A partially coagulated layer of blood was removed from the under surface of the dura corresponding to the speech center.

Blood continued to ooze from the base of the skull. The area was lightly packed with gauze, which was removed at the end of forty-eight hours.

The patient made an uninterrupted recovery.

Speech gradually returned and reached its normal range in about seven days, at the end of which time the ophthalmoscopic examination was negative.

Bryant, W. S.: Magnesium Sulphate in Purulent Cerebrospinal Streptococcic Meningitis. Boston M. & S. J., 1914, clxxi, 812.

By Surg., Gynec. & Obst.

Bryant reports in detail a case of purulent streptococcic meningitis, secondary to otitis media, treated by decompression, local drainage, and the internal use of magnesium sulphate, with recovery from the meningitis, death following 190 days later from local encephalitis from recurrence of the local infection.

The patient, a male, 22 years of age, came under treatment ten days after the onset of left earache. He then showed a temperature of 102.6°; pulse 56; rigid neck; slight Koenig's sign; Babinski's sign; knee-jerks were absent. Cerebrospinal fluid obtained by lumbar puncture showed increased pressure, pus, and paired and short-chain streptococci. Immediate operation consisted in opening the mastoid; removal of a 1.5-inch area of squamous bone, with dural incision for decompression and drainage. There was marked improvement in the patient's condition on the following day, when the administration of magnesium sulphate, by mouth, in dilute solution, was begun, and continued in amounts of from one-half ounce to three ounces per day through the course of the treatment. On the eighth day the mastoid operation was completed; on the twelfth the patient was up and dressed, there still being, however, considerable cerebral herniation through the decompression area. twenty-seventh day there were marked signs of infection and intracranial pressure, but the cerebrospinal fluid, though turbid, showed no organisms in the smear or culture. The cerebral herniation increased rapidly on the seventy-ninth day with increasing pressure signs. On the one hundred and first day the cerebrospinal fluid was again turbid, but negative to culture and smear. On the one hundred and twenty-ninth day the patient again became bedfast, and died on the one hundred and ninetieth day from encephalitis, having developed a large fungus cerebri.

The author considers that the recovery from the cerebrospinal meningitis was due in large measure to the internal use of magnesium sulphate, and is convinced that the same method used in other cases might prove entirely successful in the final result.

H. B. LODER.

Nagel, F. O.: A Case of Hypophysis Tumor. J. Ophth., Otol., & Laryngol., 1914, xx, 507.

By Surg., Gynec. & Obst.

The history of hypophyseal investigations, clinical courses, anatomy, physiology, pathology, and surgery of the disease are discussed in a brief way as the prelude to the history of the author's case. Diagnosis in this case was made on the increase in

weight of the patient and his bitemporal hemianopia. X-ray and the rhinologist examination were negative. The urea excretion was watched, and phosphorus in increasing doses was given with a rapid loss of vision; the same result was obtained with pituitary and thyroid extracts. This treatment was continued over one year, at the end of which time the X-ray showed an enlarged sella turcica, and the patient was put on very active antisyphilitic treatment under which he showed some improvement for a time.

Operation was advised and vision of 15/20 was the result in three days' time. A paracentral scotoma developed which interfered with reading somewhat. At the end of a year following the operation the patient was well; and on the strength of this case and the reports of others the author advises early operative procedure in hypophysis tumor.

Sidney Walker, Jr.

### NECK

Rawles, L. T.: Pathology of Goiter. J. Indiana St. M. Ass., 1914, vii, 511.

By Surg., Gynec. & Obst:

The author states that the earliest pathology of the thyroid is principally that of deranged metabolism, the balance swinging from hypothyroidism over to hyperthyroidism, the clinical evidence being so nearly identical that it is very difficult to decide which side is the heavier.

In discussing Baumann's iodothyrin and its action on the organism he offers these two hypotheses: (1) The function of the thyroid secretions is antitoxic to unknown toxic substances formed in body metabolism. This unneutralized toxin produces symptoms of auto-intoxication. (2) Thyroid secretions act normally by regulating the metabolism of other parts of the body, particularly the nervous system. He dwells on the interrelationship of the thyroid, ovaries, and pituitary gland, and gives the following ten points taken from the works of well-known men to emphasize this point:

1. The greater size of the thyroid in the female.
2. The enlargement of the thyroid during menstruation and pregnancy.

3. The tendency to develop "relative Basedow's

disease" during pregnancy.
4. The early atrophy of the thyroid after the menopause.

5. The loss of sexual appetite in many thyroid diseases.

6. The greater number of women who are afflicted with goiter—77.5 per cent of cases of Graves' disease occur in women.

7. Halstead observes that female dogs that have had their thyroids removed when impregnated show evidence of athyrosis as the time of parturition grows nearer, but it soon disappears after the litter is born.

8. All pups of these litters have thyroids many times the normal size.

o. In old dogs thyroidectomy is neither fatal nor accompanied with unusual symptoms.

10. Bandler claims that nervous symptoms of the menopause are less annoying if the thyroid and

ovaries atrophy at the same time.

He discusses the local diseases in the thyroid gland and states that inflammation of the gland is practically always metastastic from some other suppurating focus. The one degenerative change is that of calcareous degeneration in case of any foreign body in the gland, whether from injected substances or from true dead epithelium or organized blood-clot.

The author quotes Ochsner in the classification of simple goiters: (1) diffuse and (2) nodular; diffuse goiter being further divided into colloidal and parenchymatous. Colloid goiters are harmless from toxic symptoms. The parenchymatous type, however, is different; because of the easy functionating of the epithelium hyperthyroidism may develop.

He then describes the microscopic picture of the colloidal type compared with that of the parenchymatous type. Exopthalmic goiter may be coexistent with either parenchymatous or papillary cystic goiter. He lays emphasis on the importance of refraining from massaging glands of the exophthalmic type. HARRY G. SLOAN.

Throckmorton, G. K.: Goiter: Selection and Preparation of Surgical Risks. J. Indiana St. M. Ass., 1914, vii, 514. By Surg., Gynec. & Obst.

The author sums up the manner of selecting cases of goiter for operation in a very clear way. He lays stress on the increase of better statistics and postoperative results with our increase in knowledge of Graves' disease. In selecting cases for operation he thinks the first consideration should be the benefit to be derived from operation, and also the danger of the operation. Simple goiters are most amenable to treatment. Many patients have the operation done for cosmetic purposes alone. Again, the operation may be performed because of obstruction to the respiratory passages or because of pressure on the trachea. The operation may also be demanded on account of suspected malignancy or absorption of toxin which cripples the heart, kidneys, and liver in later years. He thinks thyroidectomy is contra-indicated in disease of the thymus, kidney, heart, muscles, in cirrhosis of liver, and in diabetes.

He advocates early operation in substernal goiter with pressure-symptoms. The goiter of adolescence usually disappears spontaneously or under treatment. If there are symptoms of goiter without enlargement of the thyroid or exophthalmos, operation should not be performed, because the patient will receive no benefit. Some other ductless glands, such as the adrenals, thymus, or hypophysis as a causative factor should be looked for. He lays stress on the danger connected with the operation in cases of bad hyperthyroidism and advocates its postponement until the acute symptoms subside. He quotes Mayo in giving the important symptoms in their order in making a differential diagnosis of hyperthyroidism: viz., cerebral stimulation, vasomotor disturbance of the skin, tremor, mental irritability, tachycardia, loss of weight, cardiac insufficiency, exophthalmos, diarrhœa, vomiting, mental depression, and jaundice. Operation in late malignancy of the thyroid is not advisable where there is involvement of the lymphatics, except to afford relief from pressure-symptoms. Severe or acute cases of hyperthyroidism where there is degeneration of the heart muscles with an irregular pulse and low blood-pressure should not be operated on. In case of a relapse after partial thyroidectomy the patient should be treated medically, and if improvement is not rapid it is wise to ligate the vessels of the remaining superior pole. Later on the enlarged part of the remaining gland will be removed.

The author believes that the mortality has been reduced in these operations because of the better selection of patients and the type of operation done. He lays particular stress on the importance of the two-stage operation.

In cases of acute Graves' disease resisting medical treatment where thyroidectomy is not advisable, the author thinks injections of boiling water into the gland as advocated by Porter is beneficial.

In the most severe cases it is better to do the two-stage operation, ligating the superior poles first, and when the patient recovers a partial thyroidectomy can be done. HARRY G. SLOAN.

Martin, H. H.: Goiter: Surgical Treatment. J. Indiana St. M. Ass., 1914, vii, 516. By Surg., Gynec. & Obst.

The author takes up most of the well-known surgical procedures in the treatment of Graves' disease, first entering into the physiology of the thyroid gland and then its pathological physiology, where he thinks that changes in the gland have each their different train of symptoms corresponding to their severity. He calls attention to the difficulty in differentiating the milder types of thyroid intoxication from those cardiovascular symptoms produced by other intoxications.

Martin thinks that after medical treatment has failed every goiter should be operated on; cases of mild hyperplasia producing mild symptoms of hyperthyroidism recover spontaneously. He deplores the fact that many cases of known exophthalmic type of goiter are treated medically until grave pathological changes have taken place in the heart and kidney, contra-indicating further surgical treatment. A few neglected acute cases of Graves' disease can be made fair surgical risks by the ligation of the superior thyroid arteries, and later on, in the course of about four months, when they have gained 20 or 30 pounds, offer a safe risk for partial thyroidectomy. He advocates ether as an anæsthetic and novocaine as a local anæsthetic where necessary. Asphyxia may be prevented during the operation for substernal goiter by opening the trachea when necessary. In the author's opinion the results from transplantation of thyroid tissues are too uniformly poor to be recommended.

In summing up he makes seven points:

1. All cases of goiter producing symptoms which have not improved under medical treatment should

be operated upon.

2. In cases where the heart is still bad, the heart remaining dilated, albumin being present in the urine, prostration and great muscular weakness continuing, operation should not be performed.

3. In acute Graves' disease where the heart shows one inch dilatation ligation of the superior thyroid vessels is advised.

4. Boiling water injections should be used if

improvement does not follow ligation.

5. The use of 1 per cent novocaine for local anæsthetic is advised.

6. A skilled anæsthetist should be employed.

7. In substernal goiters producing pressure-symptoms ligation of the superior thyroid arteries is advocated in order to make the cases better surgical risks.

HARRY G. SLOAN.

## SURGERY OF THE CHEST

#### CHEST WALL AND BREAST

Pfahler, G. E.: The Treatment of Recurrences and Metastases from Carcinoma of the Breast. Arch. Röntg. Ray, 1914, xix, 220.

By Surg., Gynec. & Obst.

The author discusses in detail fifteen cases, giving the results of the röntgen treatment.

He emphasizes the great importance of accurately determining the extent of the disease and applying the treatment as promptly and vigorously as

possible.

His technique in the cases reported varied with the advance in equipment. At the time the article was published he used a water-cooled tube with flowing water. The area to be treated was divided so that deep structures would be reached from several angles, thus preventing surface irritation. The areas of skin not directly exposed were protected with lead foil and the exposed skin was protected by filters of leather one-eighth of an inch in thickness and aluminum I to 4 mm. in thickness, the filters being placed at the top of the diaphragm to prevent soiling. The author uses the Sabouraud and Noire pastilles to measure the doses; a delay of two weeks is advised after an erythema dose before that particular area is exposed again. Since the thyroid gland is exposed more or less to the action of the X-rays and the thyroid secretion probably reduced, the author usually prescribes small doses of thyroid extract.

The following are the author's conclusions:

 The application of the röntgen rays will at times cause a disappearance of both small and extensive areas of both recurrent and metastatic carcinoma.

2. The disease can be made to disappear when

it covers the greater portion of the chest.

3. In at least one case there seemed to be produced some constitutional condition which led to the rapid disappearance of carcinomatous tissue that had not been exposed to the rays.

4. The additional administration of thyroid extract aids in the cure of the disease by maintaining a proper balance of the thyroid secretion.

5. The disease should be treated as actively and with as large doses as circumstances will permit, every means being used to protect the skin.

6. Treatment should be begun immediately after operation for carcinoma.

WILLIAM A. EVANS.

Moorhead, J. J.: The Abduction Treatment of Fracture of the Clavicle. Post-Graduate, 1914, xxix, 831. By Surg., Gynec. & Obst.

The author describes a method of treatment of fractured clavicle by means of a plaster spika applied to the shoulder and humerus at right-angled abduction to the body. He claims that this gives better apposition than any other method. He advises its use, however, only in difficult cases or in those where perfect anatomical result is especially desired.

F. C. Kidner.

Mertens, G.: Anatomical-Technical Study of Pneumolyis (Anatomisch-technische Studie zur Frage der Pneumolyse). Deutsche Ztschr. f. Chir., 1914, cxxxi, 140. By Surg., Gynec. & Obst.

Mertens gives a detailed anatomical discussion of the endothoracic fascia, with references from the work of many anatomists and surgeons. He thinks the discrepancies in these descriptions are due to the fact that the fascia is very variable, and does not offer a uniform picture in different individuals. In only four of fifteen cases that he describes was there a well-marked endothoracic fascia; in all the others it was very delicate and transparent. It cannot, therefore, have the importance that has been attached to it by many surgeons in pneumolysis.

He thinks that in pneumolysis the adhesions should always be freed with the finger, never with a blunt instrument; for the surgeon must depend on feeling rather than on sight, and for this the immediate touch with the finger is necessary. In chronic tuberculosis there is generally little difficulty in freeing the pleural sac from the chest wall, for the adhesions are mostly between the folds of the pleura. A. Mayer performs intrapleural as well as extrapleural pneumolysis, and thinks there is no danger in the opening of the pleura necessitated.

Various substances have been used to plug the cavity produced between the pleura and the chest Baer uses bismuth-paraffin-vioform; Jessen, a filling made of wax-vaseline and salicylic acid; Gwerder, a pneumatic plug made of a closed rubber tube; Tuffier uses fat; Wilms uses parts of the resected ribs; others use gas. A. Mayer thinks that it is not necessary to fill the cavity at all; he believes the lung remains collapsed long enough without it. The author is engaged in making experiments in filling the cavity with blood from the intercostal arteries and veins.

Torek, F.: Interpleural Pneumolysis (Pneumolysia interpleuralis). Deutsche Ztschr. f. Chir., 1914, By Surg., Gynec. & Obst.

Torek proposes the operation which he calls interpleural pneumolysis, for cases of pulmonary tuberculosis in which pneumothorax would be indicated, but where, on account of extensive adhesions, it either cannot be carried out or would only produce insufficient collapse of the lung.

The operation consists in freeing the adhesions between the folds of the pleura, in distinction from extrapleural pneumolysis in which the adhesions are freed outside the pleural cavity. Anæsthesia is given by intratracheal insufflation or under differential pressure. An incision about 15 cm. long is made in the sixth or seventh intercostal space and after careful hæmostasis the pleura is opened. The head is lowered so that if a cavity is opened the contents will be emptied through the mouth. With the tip of the finger the adhesions are first freed near the incision, while the ribs are held apart. The freeing of adhesions is gradually continued until the whole hand can be introduced and the most distant parts of the lung freed. When the process is completed the lung collapses as far as the degree of infiltration will permit. It is left in this collapsed condition and the wound closed without drainage.

Care should be exercised in passing over cavities not to make an opening into them. The author describes a case in which such an opening was made and emphysema resulted. Two röntgen pictures of the case are given. The operation is simple and well borne, even by patients in far advanced stages; cough and temperature decline, the general condition improves, and the cavities disappear.

A. Goss.

Jacobaeus, H. C., and Tideström, H.: Method of Overcoming Adhesions That Interfere with Artificial Pneumothorax (En my metod att avlägsna adherenser vid pneumothoraxbehandling av lungtuberkulos). Hygiea, 1914, lxxvi, 865 By Surg., Gynec. & Obst.

Jacobaeus and Tideström have been improving the technique for direct visual inspection of the interior of the chest and abdomen, so that now, they say, the pleural cavity can be inspected under local anæsthesia without the least discomfort to the

patient. They even found it possible to resect part of a tumor in the pleura after thus locating and

inspecting it.

A small actual cautery has been devised for minor operations in the pleural cavity under this technique, and with it they have succeeded in severing cordlike pleuritic adhesions which otherwise would have completely prevented effectual compression of the diseased lung under artificial pneumothorax. By thus severing one coarse band they succeeded in producing conditions favorable for inducing pneumothorax in a young woman with a large cavity in one lung. The prompt effect of the artificial pneumothorax was remarkable, the general health rapidly improving as the output of sputum became reduced. It had previously been profuse, containing numerous tubercle bacilli, but ceased almost completely after the inflation. In two other cases, also reported in detail, similar minor intrapleural operations were done-all without discomfort or the slightest by-effects or danger. Röntgenograms are given of the first case both before and after the adhesion had been severed with the cautery.

A. Goss.

#### TRACHEA AND LUNGS

Hupp, F. L.: Tracheotomy; a New Retractor and Tube Pilot for the Emergency Operation. Surg., Gynec. & Obst., 1914, xix, 671.

By Surg., Gynec. & Obst.

Several years ago Hupp recognized the high rate of mortality attending the operation of opening the trachea. He had two fatalities before the operation was completed, and realizing the imperative need for some retractor and tube guide which might be quickly and efficiently placed, devised an instrument for this emergency operation which he called a retractor and tube pilot.

The instrument is fashioned like a miniature Sims speculum, as may be seen by the illustration, one end terminating in a probe point, grooved on its convex side like the Sims instrument, but fashioned so that the two sides converge toward the probe point. When the tracheal rings have been divided it too frequently happens, as an effort is made to pass the cannula, that the severed rings, either through aspiration or pressure, are inverted, and the patient stops breathing.

It is in just such an emergency that this new dilator and tube pilot may be quickly forced through the blood and the severed windpipe, and the asphyxiated patient relieved.

Hupp mentions a series of interesting and useful rules for the operation of tracheotomy and makes the following claims for the retractor:

1. Laryngeal asphyxia from any cause may be relieved with the new instrument and a penknife.

2. It will guide the cannula quickly, safely, and accurately into the trachea, in the presence of copious bleeding.

3. In a short, fat neck with suffocating dyspnœa, relief may be given with expedition.

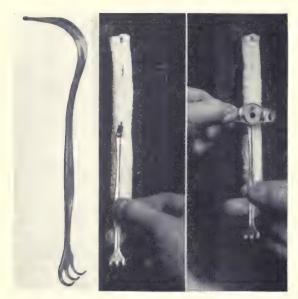


Fig. 1

Fig. 2

Fig. 3

Fig. 1. Tracheal retractor and tube pilot.

Fig. 2. Showing wide separation of tracheal rings.

Fig. 3. Retractor acting as tube pilot.

4. It is useful and safe in the hands of the general practitioner.

5. Where a second operation must be done in the presence of cicatricial and inflamed tissue the windpipe can be entered without trouble.

6. When the tracheal tube has been coughed out, a painless replacement may be quickly made.

Frangenheim, P.: Surgical Treatment of Cavities in the Lungs (Chirurgische Behandlung der Lungenkavernen). Med. Klin., Berl., 1914, x, 1299. By Surg., Gynec. & Obst.

Frangenheim regards operative treatment as indispensable for a cavity in the apex if it persists, little if any modified, after all the other tuberculous processes in the lungs have healed. Baer has reported success from surgical treatment of cavities in both lungs. The chances are better when the folds of the pleura are adherent, but a cavity in the apex with open pleural cavity does not absolutely contra-indicate intervention. With a very large and thin-walled cavity there is danger of the wall's suffering from inadequate blood-supply. Röntgenoscopy and the exploring finger give warning.

In the treatment of a cavity in the upper lobe the author insists that pneumolysis offers better chances than operations on the chest wall. By pneumolysis he means operative mobilization of the upper lobe after the cavity has been emptied by gravity, the patient reclining on his side for an hour. A few centimeters is resected from the second or third rib in front and, through a lengthwise incision in the periosteum behind, the finger is

worked through between the fascia and the costal pleura and the upper lobe is loosened up all around to correspond to the extent of the cavity. An opiate before the operation prevents reflex phenomena, and the whole operation can be done under local anæsthesia, dabbing the pleura with the anæsthetic solution. He has never had any hæmorrhage worth

mentioning with this operation. When the part of the lung containing the cavity is thus mobilized, the cavity may be obliterated by compression from a paraffin or other filling injected between the pleura and the chest wall. Various drawbacks have been encountered with different fillings. Paraffin is so heavy it is apt to slide down below the cavity, and it has also been known to work its way outward through the breach in the ribs, causing a suppurating fistula. Friction from the paraffin has also caused gangrene of the lung tissue in some instances. Compression of the lung by an inflatable bag introduced into the extrapleural space is apt to lead to infection. Wilms uses fat tissue as the filling, and this seems the best of all for the purpose, provided it is not too rapidly absorbed. Mayer insists that the pneumolysis alone without any filling is all that is necessary at first. Later, if the lung shows a tendency to expand and open up the cavity again, nitrogen can be injected to fill the space. Both Wilms and Baer insist that the filling procedure need not be restricted to old, chronic, shriveling cases, but can be applied in a recent process with cavities. There need be no fear that the procedure in itself will aggravate the tuberculosis. The cavity is influenced by the pneumolysis much more than by a thoracoplastic operation, while the heart, other parts of the lungs, and the muscles controlling expectoration are not impaired

When the technique for filling the extrapleural space is further perfected, the pneumolysis method will certainly be found extremely valuable for treatment of cavities in the lungs, especially in the upper lobe; while with diffuse pulmonary disease thoracoplasty answers the purpose better.

A. Goss.

Kawamura, K.: Experimental Study of Extirpation of the Lung (Experimentelle Studien über die Lungenexstirpation). Deutsche Ztschr. f. Chir., 1914, cxxxi, 189. By Surg., Gynec. & Obst.

Kawamura describes the results obtained in extirpating one lung—23 dogs being used for the experiments. He finds that dogs can live after the extirpation of one entire lung; if they are young they continue to grow without any noticeable interference with growth. Some of the dogs even lived after the extirpation of a part of the other lung also. The chief difficulty in extirpating the lung lies in caring for the bronchial stump. Meyer's method of lowering it is a good one, but cannot be used if the bronchus is too short or if the animal is very small.

In many cases the author amputated the lung in the middle, between two forceps, ligated the great

vessels and bronchia, and closed the wound ac-curately with a continuous suture. The results were excellent. Expansion of the remaining lung was perceptible at the end of the operation and reached its maximum within 30 to 60 days. The cavity left by extirpation of the lung was completely effaced within about 30 to 60 days by displacement of the heart and mediastinum, increase in size of the remaining lung, rising of the diaphragm, sinking of the upper aperture of the thorax, and sinking in of the wall of the thorax on the operated side. Lateral curvature of the spine developed with the convexity on the operated side. In spite of the fact that he used the hyperpressure apparatus, there was no collection of fluid in the thoracic cavity, such as Sauerbruch observed. Microscopically, the remaining lung showed soon after the operation the picture of acute vesicular emphysema, and after a considerable time that of a vicarious emphysema. There was always a true compensatory hypertrophy of the lung, never a hyperplasia. The vessels of the lung were at first markedly dilated, later newformed. The alveoli communicated with each other normally through the pores in their walls. There were no enlarged or coalesced pores in the hypertrophied lungs. The heart was macroscopically somewhat enlarged, but, as a rule, showed no microscopic changes. The operation was easily carried out with the aid of Shoemaker's hyperpressure apparatus. This apparatus also gives excellent service in artificial respiration. A. Goss.

#### PHARYNX AND ŒSOPHAGUS

Lewin, C.: Radium Treatment of Carcinoma of the Esophagus and Cardia (Zur Radiumtherapie des Ösophagus and Kardiakarzinoms). Therap. d. Gegenw., 1914, iv, 103. By Surg., Gynec. & Obst.

The author has treated 25 cases and with the exception of a few that were hopeless from the beginning he has had more or less favorable results. The subjective symptoms, such as stenosis, as well as the objective findings on examination with sounds and röntgen rays showed improvement within a comparatively short time. One case was

particularly noteworthy; so far as clinical appearances went it was completely cured after five months. The radium or mesothorium was placed in a platinum or gold filter and covered with a hard rubber cover, then placed on a slender silk bougie and introduced by means of a hollow sound. As a rule 50 to 80 mg. were used, and left in position two to four hours. This treatment was given 2 to 3 times a week for about five weeks, and was combined with external irradiation with röntgen rays or radium, and sometimes atoxyl injections. A. Goss.

Jianu, A.: Plastic Reconstruction of the Esophagus (Über Ösophagoplastik). Deutsche Ztschr. f. Chir., 1914, cxxxi, 397. By Surg., Gynec. & Obst.

Two years ago Jianu published a method of plastic operation on the esophagus, consisting of making a tube from the greater curvature of the stomach and bringing it out under the skin of the breast. He now describes in detail two cases operated upon by the method. The patients were children two and four years of age. He finds that the operation can be performed without danger on very young children and even when they are in very poor condition. The new esophagus can be formed from the stomach even in cases where the latter is adherent to the abdominal wall.

Several objections have been urged against the method, among them being: (1) That the newformed œsophagus was not long enough so that the upper end of it could be brought up under the clavicle. To avoid this difficulty, after the gastrocolic ligament is cut the gastrolienic and gastrophrenic ligaments must also be incised. (2) That the secretion at the upper end of the tube digests the skin around it. Where this occurs it is the result of a technical error. The mucous membrane should be taken from the pyloric end of the stomach, where it contains only mucous glands. (3) That peristalsis in the tube forces the food back so that the stomach is emptied in the wrong direction. This is due, not to peristalsis, for the tube is so placed that antiperistalsis occurs, but to the fact that the new œsophagus is made to open much lower down toward the pylorus than it should. A. Goss.

# SURGERY OF THE ABDOMEN

#### ABDOMINAL WALL AND PERITONEUM

Levit, J.: Hernias in Unusual Anatomical Positions (Beitrag zu den seltenen Hernien; Brüche mit seltener anatomischer Lage). Čas. lek. česk., 1913, lii, 1387, 1430, 1463, 1504, 1527, 1561, 1580, 1624, 1637.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Abdominal hernias, except those of the linea alba and linea spigelii, are generally the result of operations, more rarely of injuries or abdominal inflammations. Twenty-one cases of free abdominal hernias were observed, 8 in men and 13 in women,

and 16 incarcerated ones, 1 in a man and 5 in women. The patients were from 15 to 65 years of age. Sixteen cases had been preceded by operations for appendicitis, 5 of them incisions of abscesses without appendectomy; 11 were operations for peritonitis in the intermediary stage with drainage. In one case there had been operation for an incarcerated inguinal hernia, in 3 cases for umbilical hernia, and in one each for resection of the small intestine on account of tubercular stricture, ovariotomy, and cæsarean section. One operation was for recurrent abdominal hernia which had appeared after punc-

ture for ascites, and in two cases there were injuries, one gunshot, and one stab, which had necessitated primary laparotomy with drainage. In 8 cases suture in layers was performed, twice Kukula's radical operation, 16 times Maydl's plastic operation for umbilical hernia, and once fascia lata was transplanted.

In Maydl's plastic operation two arch-shaped incisions are made, one on each side of the linea alba, and a median bridge-shaped flap of fascia formed, both edges of which are sutured together with invagination of the flap. Over this the laterally undermined edges of the abdominal aponeurosis are drawn together, forming a second layer over the

rupture.

Epigastric hernias were found 21 times among 2,104 cases of hernia, 18 of them in males and 3 in They appear most frequently between the thirtieth and fiftieth years; the youngest patient was 20, the oldest 62. They generally occur in people who do heavy work, and result from slight injuries of the epigastrium, or continuous tension on the tissues of the linea alba which produces small gaps through which the preperitoneal fat protrudes. The hernias were from the size of a hazelnut to that of a child's head; in 12 the hernial sac was empty, in 6 it contained omentum; in one, the tip of the stomach; in one, the hepato-umbilical ligament; and in another, the gastrohepatic ligament. In one case an omental hernia was as large as a child's head, and incarcerated. They all lay midway between the ensiform cartilage and the umbilicus. In 13 cases there were stomach symptoms so severe that the patients could not work, and their nutrition was greatly reduced although the stomach was not contained in the hernia. In 6 cases Maydl's plastic operation was performed, in addition to simple suture of the abdominal wall. Stühmer has pre-viously published 41 cases of hernia of the linea spigelii, to which the author adds two new ones, one free and one incarcerated.

The first case was a 52-year-old woman who had been very obese, but who had lost much in weight for the past four years, after a fall from a chair, after which she had pain in the right side of the abdomen, and a tumor as large as the fist, which disappeared when she lay on her right side; the pain also disappeared in this position. Later, the pain and tumor had reappeared on sudden movements, recently even under the abdominal binder that had been ordered. A tumor as large as a small fist was found somewhat above the middle of the left linea umbilico spinalis. Incision was made parallel with Poupart's ligament; under the aponeurosis there was a hernial sac 5 cm. long with a lipoma as large as a hazelnut at the apex. The contents was omentum and sigmoid flexure. A radical

operation was performed.

The second case, a 46-year-old woman, had been kicked in the abdomen by a cow when she was 10 years old; a hernia twice as large as the fist immediately appearing. An irreplaceable hard tumor

as large as a walnut remained, and, as time passed, it grew larger and became painful. On the day before admission to the hospital coughing had caused an increase in the size of the tumor and incarceration of the abdominal hernia, which was then as large as a hen's egg, and located at the left edge of the rectus between the mesogastrium and hypogastrium and contained intestine. The intestine could be replaced, but something hard remained in the sac. An oblique incision was made over the hernia, which contained adherent omentum and a loop of small intestine. The opening was 2 x 1.25 cm., and lay four finger-breadths above Poupart's ligament at the outer edge of the rectus.

Encysted hernia is discussed, which Kukula calls "hernia in hydrocele" to distinguish it from "hernia and hydrocele." Twelve cases have previously been described, to which three new ones are added. This form of hernia can be recognized in a tense hydrocele by the fact that there is intestinal tympany at the upper pole of the hydrocele; it can be recognized in a flaccid hydrocele when percussion and palpation can demonstrate a hernia, and if by pressure on the hydrocele sac the fluid can be pushed up into the region of the neck of the hernial sac. In transillumination dark spots are seen at

the upper pole.

Three cases of obturator hernia were observed

as follows:

1. A 37-year-old man had been troubled with pain in the stomach and vomiting for two years. For six days he had grown worse. There was distention of the abdomen and constipation, but no external hernia was visible. On administration of purgative, diarrhœa stopped, but the vomiting persisted. After four days, laparotomy was performed, with a diagnosis of cæcal stenosis. Twothirds of the small intestine was dilated, one-third collapsed; at the boundary line between the two, the intestine was incarcerated in the left obturator canal. On pulling out the intestine, there was rupture and a discharge of the contents into the pelvis. The intestine was resected, followed by irrigation and drainage. Death resulted three days later from peritonitis: An ulcer was found in the stomach.

2. Laparotomy was performed on a 68-year-old woman for three days' symptoms of occlusion of the intestine. There was incarceration in the left obturator canal. Two months later after lifting a heavy object she had pain but no symptoms of occlusion. When admitted to the hospital six days later, the region of the left obturator canal was painful on pressure. Laparotomy was done. There were dilated and collapsed loops of small intestine, and in the obturator canal a loop with no changes in its walls. The canal, which would admit a finger, was closed by suture of the peritoneum.

3. The third case was hernia of the intestine with a gangrenous wall in the right obturator canal. The case was received late and death resulted in

spite of enterostomy.

A case of diaphragmatic hernia operated upon by the author's father has not heretofore been published. A boy, 14 days old, had a hernia as large as a nut between the sixth and seventh right ribs, containing liver and small intestine. After reposition a celluloid plate was inserted between the

diaphragm (peritoneum) and skin.

Another case was that of a 23-year-old man, who was stabbed in the left side of the thorax. The result was dyspnœa, no respiratory movements of the left half of the thorax, intercostal spaces bulging. There was dullness at the left apex; anteriorly to the third rib, dullness with tympanitic accompanying sound; posteriorly, there were tympanitic sounds from the spines of the scapula to the ninth rib. There was a deep stab wound 7 cm. long between the eighth and ninth ribs in the posterior axillary line. On opening the wound, a large hole was found in the pleura and there were fragments of ribs that had been splintered off. The lungs were collapsed and at the bottom of the pleural cavity omentum could be seen. Just back of the highest point of the diaphragm there was a hole, in which the omentum was incarcerated. The opening was enlarged and the omentum replaced. The diaphragm was sutured in two layers and the sutures covered with parietal pleura. Recovery followed the closure of the thoracic wound. KLAUBER.

Zollinger, F.: Traumatic Hernias; the Duty of Submitting to Operation (Traumatische Hernien Operationspflicht). Monatschr. f. Unfallheilk., Leipz., 1914, xxi, 102. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author discusses from a medicolegal point of view the duty of an insured person's submitting to operation. The Swiss Federal Court leans toward the opinion of the German court and acknowledges the duty of being operated upon only when the operations are beyond doubt simple and without danger. Heretofore it has not considered that operation for traumatic hernia belonged in this class. The last decision of the Federal Court, however modifies this opinion decidedly and has established a precedent. The court declared that if the hernia was small the prospects of permanent recovery were very good and the danger of the operation under local anæsthesia almost nil, even considering the possibility of embolism; therefore the Court of Appeals of the Canton of Basel came to the conclusion that the complainant must submit to operation. The Federal Court, as a court of appeal, confirmed the decision of the lower court. GLASS.

### GASTRO-INTESTINAL TRACT

Pirie, A. H.: Cinematography of the Antrum Pylori, Pylorus, and First Portion of the Duodenum. Arch. Röntg. Ray, 1914, xix, 163. By Surg., Gynec. & Obst.

Pirie has designed a table for producing several röntgenograms, for instance, of the duodenum, upon one plate. With the aid of the fluoroscope the patient is posed after the method of Cole. By a device, described and illustrated in the original article, successive portions of the plate are exposed. Six exposures, 4x5, are made on one 10x12, or sixteen 3.5x4.25 on one 14x17 plate.

The change takes one-half second, the exposure varying with the apparatus, the sixteen exposures

occupying not over 32 seconds.

The reproductions accompanying the paper, sixteen views-each of a normal duodenum, a pylorus with adhesions, and a duodenal ulcer-are sufficient proof of the utility of the device.

The table is also so fitted that any pair of rontgenograms may be stereosocopic, or the whole series may be made in stereoscopic pairs. The stereoscopic shift may be either lengthwise or crosswise of the patient. DAVID R. BOWEN.

#### Lichty, J. A.: Some Clinical Aspects of Gastric Hæmorrhage. Am. J. M. Sc., 1914, cxlviii, 680. By Surg., Gynec. & Obst.

Lichty discusses the statistics regarding the frequency of hæmorrhage which seem to differ widely. This variance is probably due to "observation," which is very apt to be unreliable. In the author's own case blood was reported to have been seen or found chemically or by the Einhorn string-test in 43 per cent of cases. However, he feels quite sure that at some time it was evident in the remaining 57 per cent, but was not detected. On account of the many possible sources of error in the chemical occult test, he thinks the Einhorn string-test is somewhat more reliable, yet not too much dependence can be placed upon it. A negative string-test is more reliable than a positive one.

In the past ten years, the author has seen six cases of gastric or duodenal ulcer in which sudden marked and alarming hæmorrhages occurred immediately upon the withholding of food by the mouth. One of these proved fatal. He has also noticed this phenomenon in a few cases of gastric carcinoma. The theory most widely accepted as regards the causation of gastric ulcer is probably lowered general vitality, localized traumatism, and increased or changed secretions. Hydrochloric acid is an irritant to all tissues except the normal mucous membrane of the stomach. It would seem reasonable that hydrochloric acid, especially when present in high values not combined with certain foods, would cause increased irritation resulting in hæmorrhage.

1. The statistics of hæmorrhage from the stomach whether of hæmatemesis or melæna, or as revealed by occult blood-tests, or by string-tests, are of very little value.

2. In the treatment of acute peptic ulcer, or acute exacerbation of chronic ulcer, especially when accompanied with hyperchlorhydria, food should not be withheld from the stomach at once.

3. Surgical treatment for gastric hæmorrhage has

a very limited but definite field.

HENRY J. VAN DEN BERG.

Friedenwald, J.: A Clinical Study of One Thousand Cases of Cancer of the Stomach. Am. J. M. Sc., 1914, cxlviii, 660. By Surg., Gynec. & Obst.

The author presents a carefully tabulated report of one thousand cases of cancer of the stomach, and comes to the following conclusions:

r. Of patients suffering from various gastric disturbances, 9.6 per cent are affected with cancer,

while but 7.8 per cent have ulcers.

2. The largest proportion of cancers occur between the fortieth and sixtieth years of age, while the largest proportion of ulcers occur between the twentieth and fiftieth years.

3. The greatest number of cases occur in males

(588 males and 412 females).

4. Of patients affected with gastric cancer there is a hereditary history of cancer in 9.4 per cent cases.

5. A definite history of trauma occurs in 1.9

per cent of cases.

- 6. Anæmia is present in 82 per cent; chronic endocarditis in 11 per cent; arteriosclerosis in 69 per cent.
- 7. Seven per cent give a direct history of former ulcer, and only in 23 per cent could the cancer have formed from ulcer.
- 8. A history of overindulgence in food or drink can be obtained in about half of the cases of cancer.
- 9. The greatest proportion, 89 per cent, of cases of cancer present an anacidity; 3 per cent show a normal acidity; 4 per cent show hyperacidity, and 3 per cent, subacidity. Lactic acid is present in 81 per cent of cases; the Oppler-Boas bacilli in 79 per cent; sarcinæ in 32 per cent; coffee-ground contents in 61 per cent.

10. The average duration of life is less than one year in 66 per cent of all cases; between one and two years in 22 per cent; and over two years in 11 per

cent.

11. Periods of improvement, including gain in weight, are not uncommonly observed for a short time in cancer of the stomach.

12. Latent cancer occurs in 1 per cent of the cases.

13. Dysphagia is present in 7 per cent of the cases, and pain, the most frequent of all symptoms, in 93 per cent. Tender abdominal areas are present in 69 per cent.

14. Anorexia and vomiting are most prominent symptoms, being present in 89 per cent of cases.

15. Hæmatemesis is present in 25 per cent of all cases, and melæna in 19 per cent. Occult blood

appears in the stools in 92.5 per cent.

- 16. The tumor was sufficiently advanced to be palpable in 72 per cent of cases, but only in 30 per cent of these cases within a half-year of the first appearance of symptoms; while in 60 per cent of cases this symptom was manifested after the first six months.
- 17. Clinically, in 60 per cent of cases the cancer is located at the pyloric area; in 7 per cent at the cardiac area; and in 30 per cent there is a general involvement.

- 18. Ninety-nine per cent of the gastric cancers are primary and but 1 per cent represent secondary growths.
- 19. Dilatation of the stomach occurs in 47 per cent of cases.
- 20. Perforation occurs in 2 per cent; fever in 43 per cent; ascites and ædema in 21 per cent; jaundice in 3 per cent; and metastases are present in 67 per cent
- 21. Operation was performed in 28 per cent of the cases; in 52 per cent of these there were exploratory laparotomies; in 37 per cent gastro-enterostomies; in 8 per cent gastrostomies; and in 3 per cent pylorectomies and gastrectomies. In but a small proportion of cases did the patients survive more than a year after operation.

22. As determined by operation or autopsy the location of the growth was as follows: In 59 per cent there was pyloric involvement; in 8 per cent cardiac involvement; in 8 per cent involvement of the lesser curvature; in 4 per cent of the greater curvature; in 2 per cent of the fundus, and in 19 per cent there was a general involvement.

The early diagnosis of cancer of the stomach is usually quite difficult, for the most important symptoms may be absent even though the growth may have already assumed considerable propor-

tions.

The most important sign of this disease, the presence of a palpable tumor, is observed in 72 per cent of cases, and yet in 60 per cent of cases it makes its appearance six months after the first appearance of symptoms, and it cannot therefore be relied upon as an early sign of the disease.

The absence of free hydrochloric acid is a frequent sign, as it is present in 89 per cent of cases, and yet the symptom is so frequent in other conditions that

it loses much of its value.

Signs of pyloric obstruction with consequent dilatation are noted at times, and when present early are of the greatest diagnostic importance. According to the author, one of the most constant signs as an early manifestation of the disease is the presence of occult blood in the stools. It was present in 92.5 per cent of the series of cases. The continued occurrence of this sign whenever there is a suspicion of cancer points rather certainly to the presence of this disease.

A history of some previous digestive trouble was observed in 232 cases — 23 per cent. Of these, 109 had slight attacks of indigestion for a period of five years or more preceding the present gastric disease, while 25 had slight attacks during the five years preceding the present disease. Of the remaining 123 cases, 23 had chronic indigestion more or less all of their lives, while 29 had chronic indigestion mainly during the last years preceding the present illness.

Seventy-three cases had a definite history of former gastric ulcer. It is therefore evident that in the 1,000 cases but 23 per cent presented a history of any previous digestive disturbance even in the

slightest degree, and that but 7.3 per cent gave a direct history of ulcer. If, therefore, all of the former digestive disturbances be considered as due to ulcer, the formation of gastric cancer from ulcer could not have taken place in more than 23 per cent. If all of the cases with slight digestive disturbances be disregarded in the series this percentage is reduced even to 12.3 per cent. The author, therefore, believes that from a study of his own cases from a clinical point of view, as well as from the pathological studies of Aschoff, that the figures of Wilson and MacCarthy — 71 per cent — so often referred to, are far too high.

The early diagnosis of cancer of the stomach is still difficult, and the author advises exploratory incisions in all patients over forty years of age in whom there is a suspicion of malignancy. Excisions of gastric ulcers should be considered on account of a

certain proportion becoming malignant.

HENRY J. VAN DEN BERG.

Januschke, H.: Some Physiological Points in the Treatment of Stomach Ulcer and Related Conditions (Einige physiologische Gesichtspunkte in der Behandlung des Magengeschwüres und verwandter Zustände). Therap. Monatsh., Berl., 1914, xxviii, 244.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Many nervous persons suffer from spasms of the muscularis mucosæ of the stomach that lead to ischæmia and finally to ulcer of the stomach. The irritation that produces the convulsions of the muscles can be overcome by excluding the motor endings of the vagus. Atropine accomplishes this. Five drops of a 1 per cent solution of atropine sulphate is given three times daily one-half hour before meals. This amounts to about 0.3 mg. atropine sulphate at a dose. If this does no good the dose is increased to 0.5 mg. three times daily.

There are two reasons why stomach cramps do not always yield to energetic atropine administration. There may be spasm of the pylorus also; in such cases atropine solution should be given per rectum or subcutaneously, or there may be an abnormal occlusion by contracture of the sphincter of the pylorus; in such cases it is probable that nothing can be accomplished by atropine. This sphincter is innervated by the sympathetic, and there is, at present, no known means of excluding the sympathetic nerve-endings, but papaverine hydrochloride diminishes the sensitiveness of the smooth muscles to nervous and other irritations. It is given in centigram doses by the mouth or subcutaneously. Pal recommends as the maximum first dose 6 cg. internally or subcutaneously, and I cg. intravenously.

In cramps of the muscles of the stomach that are caused not only by the vagus but also by other irritations from the nerves or the blood, it is advisable to give a combination of atropine and papaverine. Morphine should not be used, and opium

should be replaced by papaverine.

Food stuffs and their relation to motility are discussed, with reference to sparing the mucous membrane of the stomach and saving it from irritation. Among the most effective means of excluding irritation is anæsthetizing the mucous membrane: anæsthesin in powder form is given two or three times daily by the mouth, in doses of from 0.3 to 0.5 gr. Analgesics also cause a decrease in certain inflammatory exudative processes. An accurate analysis of the means of stopping pain is also of value in diagnosis — diagnosis through therapeutics. If stomach pains disappear under atropine they are due to muscle spasms; if anæsthesin or novocaine is necessary to complete the effect, it indicates that there was a true inflammatory or wound pain. The results of papaverine in diagnosis are not uniform. If abdominal pains disappear on the inhalation of amyl nitrite (lead poisoning and many nervous affections), then the result is caused by the dissolution of a spasm of the blood-vessels. Hyperæmia decreases irritation, quiets pain, and exercises a curative effect in the diseased tissues. It is produced by heat. WEINBERG.

Payr: Indications for Operative Treatment of Ulcus Callosum Ventriculi (Zur Indikationsstellung der operativen Behandlung des Ulcus kallosum ventriculi). Zentralbl. f. Chir., 1914, xli, 1065.

By Surg., Gynec. & Obst.

By ulcus callosum, Payr indicates that form of ulcer of the stomach characterized by an extensive firm induration, palpable in the wall of the stomach and visible on the surface. The serosa is very vascular, and fine or coarse adhesions may be present; the wall of the stomach has a chronic ædematous consistency, with scarlike contractions, and shows extensive infiltration. The regional lymph-nodes are usually enlarged. "Tumorforming" ulcers are seen especially in the region of the pylorus and are differentiated with difficulty from carcinoma. All these varieties of ulcer may become carcinomatous. Histologic examination of a regional lymph-gland during the operation may fail in establishing the diagnosis of carcinoma. Payr advises resection in all cases of "callous ulcer," if the patient's condition will permit. Gastroenterostomy is reserved for simple ulcers, duodenal ulcers, and pyloric stenosis due to ulcer.

E. P. ZEISLER.

Perthes, G.: Resection of the Stomach for Ulcer of the Stomach (Über die Resektion des Magens bei Magengeschwür). Arch. f. klin. Chir., 1914, cv, 80. By Surg., Gynec. & Obst.

Recent wor: by surgeons and radiologists has shown the great frequency of spastic hour-glass stomach. Von Bergmann and others think that this may be not only a result of ulcer of the stomach but a cause of it. The spastic contractions are due to a general nervous disturbance of the vagus and sympathetic. The contractions shut off the vessels, and lead to nutritive disturbances, ischæmia, and

self-digestion in the region from which the circulation is cut off. The author thinks this can be true only when the spasm and the ulcer are at the same site, but this is not always the case. However, even if they are not causative the spasms may serve to keep up and extend an ulcer, transforming an acute into a chronic one. Moreover, these spastic stenoses may prevent recovery of an ulcer at a distance from the pylorus after gastro-enterostomy.

Perthes describes three cases in which ulcers of the lesser curvature continued to develop and penetrate in spite of the fact that a gastro-enterostomy opening that had been established was functioning perfectly. The ulcers were shut off from the opening by the contraction, which, being spastic, had disappeared on operation. The patients recovered after transverse resection of the stomach had been made. Such resection is unconditionally indicated in this class of cases, whether the ulcers are carcinomatous in nature or not. Ulcer of the pylorus, on the other hand, may be treated by gastro-enterostomy, with or without exclusion of the pylorus if it is beyond doubt noncarcinomatous.

It is difficult to differentiate carcinoma and callous ulcer. The author suggests as the best method of differentiation an examination of the lymph-glands at the time of operation. A lymph-gland can easily be removed and a frozen section examined within 7 minutes. Some cases of carcinoma may escape detection in this way, but the majority of them can be diagnosed. If there are signs of carcinoma, resection should be performed.

The author has performed 40 resections since 1911 with three deaths; among the 18 pure transverse resections there were no deaths. Two of the deaths were in cases of resection of the pylorus and one in a case of resection of the central half of the stomach. During the same time he has performed 56 gastro-enterostomies without a death. Three of the patients that have died since died of carcinoma, so that he thinks even more extensive resection than usual is indicated in carcinomatous cases. Of the 18 transverse resections for ulcer of the fundus 15 have been under observation for longer than three months, and are in good general condition and have increased in weight. This indicates that the partial or total exclusion of stomach digestion is wholly compensated for by the increased activity of intestinal digestion. A. Goss.

Reuben, M. S.: Pyloric Stenosis in Infancy. Arch. Pediatrics, 1914, xxxi, 809. By Surg., Gynec. & Obst.

After thoroughly discussing all phases of pyloric stenosis in infants, the author reports three typical cases. The points of interest in the first case are: (1) There were two cases of pyloric obstruction in one family, both males. The first was of a high grade type and led to a fatal termination, while the other (the one reported) was mild and the recovery was speedy. (2) The infant improved immediate-

ly when complementary feeding was instituted. (3) The pyloric tumor and visible peristalsis disappeared when the infant began to gain. (4) There was a high acidity even when the child was doing well, proving that the spasm was not due to this. (5) An X-ray of the stomach taken when the infant was gaining showed much delayed transmission of food. This case illustrates the presence of both spasm and organic obstruction of a mild degree. The tumor and peristalsis were probably due to spasm of the pyloris. The presence of gastric retention and delayed transmission of food during convalescence point either to the presence of a slight organic stenosis or to the fact that the stomach had not yet recovered its full motor power, due to atony from over-distention.

The points of interest in the second case are: (1) The absence of visible peristalsis and palpable tumor, with a high degree of stenosis; (2) the absence of gastric retention on account of very frequent vomiting; (3) the total acidity never was higher than 35, and free hydrochloric acid was always present; (4) the appearance of a normal milk stool after three days of starvation stools; (5) the return of vomiting after operation points to the presence of spasm as a superimposed factor in these cases, as there was no obstruction after operation. A posterior gastro-enterostomy performed in this case. The child recovered.

The third case also recovered. E. L. CORNELL.

Veeder, B. S.: Duodenal Ulcers in Infancy. Am. der, B. S., 1914, cxlviii, 709.

By Surg., Gynec. & Obst.

Veeder reports five cases of duodenal ulcer. Four were diagnosed clinically and later confirmed in three instances at autopsy; in one case the lesion was unsuspected during life, and was found postmortem; in the fourth case the infant recovered. All infants were under six months of age and "marasmic," and in only one case were the diatetic errors pronounced. Vomiting was present in all five cases. Massive hæmorrhage was present in four of the five cases. When the latter symptom is absent, the diagnosis cannot be made - acute ulcerative lesions of the lower intestine, fissure, etc., must be excluded.

Tests for blood should be made in all cases where vomiting is associated with atrophy in young infants. The prognosis is unfavorable on account of the age of the patient and the associated nutritional disorders. For the same reasons surgical interference has not been deemed advisable.

HENRY J. VAN DEN BERG.

Brüning, A.: Technique of Exclusion of the Pylorus in Ulcer of the Stomach (Beitrag zur Technik der Pylorusausschaltung beim Ulcus ventriculi). München. med. Wchnschr., 1914, İxi, 1107. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Brüning's method is a modification of Wilms' method of exclusion of the pylorus. He makes a circular incision in the serous and muscular coats around the ulcer down to the mucous membrane. He then covers the mucous membrane with a strip of fascia taken from the sheath of the rectus, and by simple suture covers the defect in the serous and muscular coats. The advantage that he claims for his method is that, in incising the muscle, Auerbach's plexus is cut, which conducts the peristaltic stimulus, and this stops the frequent cramplike contractures that otherwise take place.

BERNARD.

Guleke, N.: Results of Exclusion of the Pylorus by Ligation (Ergebnisse der Pylorusausschaltung durch Fadenumschnürung). Arch. f. klin. Chir., 1914, cv, 67. By Surg., Gynec. & Obst.

Kelling and Parlavecchio's method of excluding the pylorus by ligation has fallen more or less into discredit, because of some clinical failures that have been observed and because of a series of animal experiments conducted by Tappeiner. These showed that ligatures around the intestine or pylorus in dogs cut through the wall and were discharged into the intestine; they were eliminated after two or three months, and only left a fine linear scar which did not obstruct the lumen at all. The author himself had made a series of animal experiments with similar results. But he had a number of cases in which the method seemed indicated on account of its simplicity and the short time required; so he used it in 13 cases, and for the sake of testing the results has examined the patients after periods varying from six months to two years. He examined the contents of the stomach chemically and took röntgen pictures to determine whether the food was passing through the pylorus or the gastroenterostomy opening. Two of the patients died, so that II were left for examination. The clinical results were good in all except one patient who complains of hyperacidity. The patients are able to work and some of them are men doing very heavy work. Among the 11 cases the pylorus is open in only 2, as shown by röntgen examination. In the other o it is practically impenetrable; the food under normal conditions passes through the gastroenterostomy opening. In some cases it can be forced through the pylorus but this is of no practical The author thinks, therefore, that significance. the method is indicated in cases where the patient's condition demands rapid operation and in cases where an ulcer of the pylorus or duodenum has just perforated and the operation cannot be carried out under aseptic conditions. Care should be taken to constrict the pylorus to just the right degree, for if the ligature is not pulled tight enough the pylorus is of course left open, and if it is pulled too tight it will cut through the wall. A. Goss.

Quimby, A. J.: Röntgen Interpretation of Intestinal Conditions. Am. J. Röntgenol., 1914, i, 399. By Surg., Gynec. & Obst.

Quimby employs both the röntgenoscopic and röntgenographic methods and insists that the former method adds so materially to accuracy of diagnosis that any possible danger connected therewith is fully discounted. Neither method alone can produce results in any way commensurate with their combined use. Manipulative röntgenoscopy becomes extremely valuable in studying duodenal adhesions, ileal kinks, retrocæcal appendices, etc.

Quimby believes that simple ptosis is without harm and does not interfere with intestinal function, although it may influence the welfare of the other viscera. If the pylorus and duodenum descend with the stomach, the drainage will be satisfactory

and function will still be maintained.

The author makes a practice of using from four to six ounces of bismuth subcarbonate and continuing the patient on a normal diet, withdrawing all cathartics for a number of days preceding the examination. A thorough cleansing of the bowel improves function for an indefinite period, and tests under such conditions may lead to false findings of stasis. He contends that the patient should not be permitted to lie down for eight hours thereafter, because if gastric delay is due to kinking of the duodenum, this might be corrected by the upward displacement of the stomach; similar precautions are necessary in studying delays by duodenojejunal kinks.

Contrary to some other reports, the author finds that the appendix is most apt to fill after a large enema, becoming especially visible twenty-four hours after the enema, his explanation being that the appendix was filled with fæces that prevented the entrance of bismuth that has already been administered by mouth at the same time the enema was given. Quimby states that he has never failed to find some portion of the appendix when the examination was directed toward the appendix alone. The trained hand can examine the appendix, cæcum, and terminal ileum in a very few seconds.

He records some interesting observations upon colonic stasis, some of which are quoted as follows: "A distended rectum and pelvic sigmoid will push the ileum upward and may carry the cæcum up, and, if the ileum is filled with gas or fæces, the transverse colon and stomach are elevated. Mesenteric bands and contracted mesentery have a predilection for forming at the following places: just above the cæcum on the ascending colon; a short distance from the hepatic flexure; at the juncture of the descending colon with the ileal sigmoid; and at the juncture of the ileac and pelvic sigmoid."

He offers the remarkable convictions "that nature has established certain compensatory phenomena that equalize the material supplied the intestinal tract, and by that tends to prohibit the reception of more material after a safe amount has been received, and that the quantity is dependent on the power of any special portion to digest the amount therein; and that pyloric spasm is partly due to a protest against more food entering the intestine after a given amount has preceded, etc."

E. H. SKINNER.

Fromme, A.: Spastic Ileus (Über spastischen Ileus). Deutsche med. Wchnschr., 1914, xl, 1010. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The small number of cases reported of acute spastic ileus absolutely demonstrated by operation or autopsy justifies the publication of individual cases. In the authors 2 cases, both preceded by trauma, when the abdomen was opened more or less extensive longitudinal contractions of the small intestine appeared, which could be regarded as the cause of the ileus, and which in one case disappeared during the operation. In both cases recovery followed the operation.

The undoubted influence of the splanchnic and vagus does not need to be taken into account in the etiology, for there are enough causes without that.

The author distinguishes 4 classes of spastic ileus: (1) those caused by external influences acting on the intestine, (2) those caused by irritating influences originating within the intestine, (3) spastic conditions caused by hysteria, and (4) those in

which the etiology is not definitely known.

Spastic contractions have a further significance on account of their relation to invagination. In the examples given by the author this relationship was clinically proved; it has been known for a long time experimentally. Both have the same causes. Various transition forms appear. The spasm is a preliminary stage of invagination which arises from ileus.

Weible, R. E.: Volvulus: Torsion of the Whole Mesentery. Surg., Gynec. & Obst., 1914, xix, 644. By Surg., Gynec. & Obst.

The author gives a case history of a man with torsion of the whole mesentery, in which operation was followed by recovery. From the literature he collected 22 cases cured by operation, two of which occurred in America. From a further compilation of 45 cases, unsuccessful and post-mortem, it was noted that this torsion was not confined to any particular age. Of the 64 cases 13 were females and 51 males. In 37 of the cases the direction of the twist in 7 was opposite to the direction of the hands of the clock. Torsion may be from 90° to 720°. Mention is made of the "mesenteric folds" or "contracted bands" so frequently described. It is possible that they are formed in the following manner: A loop of bowel is fixed, perhaps by adhesions, or the terminal ileum is anchored by the larger colon, or the mesentery at this point is actually shorter than the rest; then with the winding up of the mesentery, as on a windlass, strong traction is exerted upon the fixed or shortened portion. The practical point is that in the presence of obstructing mesenteric folds nothing should be attempted until after examination of the root of the mesentery.

The mesentery is apt to be more horizontal than normal, not so broad, and is longer from its spinous attachment to the gut margin. Common ileocolic is frequently present, and the third portion of the

duodenum often mobile.

The exciting causes, symptoms, diagnosis, and treatment are all touched upon. A table of cases and a carefully prepared bibliography follows the article.

Simin, A.: Etiology of Appendicitis (Zur Frage nach der Atiologie der Appendicitis). Zentralbl. f. Chir., 1914, xli, 466.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In order to prove to what degree the diseased appendix is accessible to foreign particles and how easily it gets rid of them, 2 to 22 days before the operation the author gave his patients one to four wafers each containing 0.5 charcoal. From his observations he concludes that the diseased appendix is always accessible to the intestinal contents and to any disease-producing agent that may be in the intestine, and that this intestinal contents may be held for a long time in the appendix. The behavior of the normal appendix under such conditions will be tested later.

Manning, J. B.: Appendicitis in Early Childhood. Pediatrics, 1914, xxvi, 592.

By Surg., Gynec. & Obst.

Four cases are reported, all of which were operated upon and the patients recovered. Each child was three years or less of age. Cyclic vomiting, starch indigestion, and obstinate constipation should be looked upon with suspicion and the patient watched carefully for chronic or acute appendicitis. That these conditions exist without appendicitis is admitted; however, in his experience the author has seen only one case of recurrent vomiting which met the requirements so extensively and unhesitatingly described in the newer textbooks on children as cyclic vomiting.

In every instance of starch indigestion, particularly the more severe types with abdominal distention and occasional elevation of temperature, the possibility of appendicitis should be carefully considered.

In the cases reported, the first definite observation made was distention of the abdomen. In three of the cases there was either soreness, pain, or dragging of the right leg. The white and differential counts were of some assistance, but the safest and most reliable indications for diagnostic purposes lie in the clinical findings and the condition of the child. If the cases are operated upon early, the mortality will be practically nil.

EDWARD L. CORNELL.

Opitz, E.: Relation of Diseases of the Appendix to Those of the Cæcum and Sigmoid Flexure (Über Beziehungen der Erkrankungen des Wurmfortsatzes zu denen des Coecums und Romanum). Arch. f. klin. Chir., 1914, cv, 222.

By Surg., Gynec. & Obst.

The author discusses 155 laparotomies in which the appendix, cæcum, and sigmoid were examined. He found changes and adhesions more frequently in the cæcum and sigmoid than in the appendix.

At first he thought that all such adhesions were inflammatory in nature but has concluded that many of them are congenital. The Americans give special names to certain adhesions, such as Jackson's membrane and Lane's kink, and, moreover, they try to establish a difference between congenital and acquired adhesions, claiming that the congenital ones are broader and more veil-like and less vascular. and that the acquired ones are firmer and more vascular. The author does not recognize such a distinction, but thinks that the acquired adhesions change in time to a picture resembling that given for the congenital ones. In the literature he finds that about 20 per cent of new-born children show adhesions. Almost all adult women who have had any abdominal disease show such adhesions, the remaining ones having arisen from inflammatory changes generally in the intestine. The almost universal constipation in women is one of the causal factors.

Among 20 microscopically normal appendices 13 were surrounded by adhesions. This shows that the inflammation originated outside, not inside the appendix. As his cases are gynecological, he has no opportunity of examining the upper part of the large intestine but, judging from the frequency with which the cæcum and sigmoid are diseased, he thinks the whole of the large intestine is often involved; therefore, more attention should be given than heretofore to the treatment of the intestinal disease rather than of the local process in the appendix. Stasis of intestinal contents from a diseased intestine in the appendix is much more apt to cause appendicitis than the contents of a normal intestine; the resistance of the tissues of the appendix is of course reduced also by the general intestinal disease. Probably intestinal toxins play an important part too in disease of the appendix. In the beginning of appendicitis it is not a question of bacteria but of toxic changes in the tissue. The bacteria found in the late stages of acute appendicitis play only a secondary part. Another possibility is that nervous disturbances in the vagus and sympathetic cause circulatory changes in the appendix that lead to disease. Such nerve disturbances may be initiated by intestinal toxins.

There are doubtless many cases of acute disease of the appendix that have passed without the patient's being aware of them if the cæcum was in good condition so that the contents of the appendix could be readily discharged. Many cases diagnosed as chronic appendicitis are in reality typhlitis or typhlocolitis. Many cases are sent to the gynecological clinic with a diagnosis of ovarian inflammation that are in fact cases of sigmoiditis. In operations for chronic appendicitis the author thinks a large incision should be made, laying bare the cæcum and ascending colon. He does not attempt to decide whether treatment should consist only in loosening adhesions or whether a mobile cæcum should be fixed, but desires chiefly to emphasize the fact that the appendix alone should not

be considered in appendicitis, but the entire intestinal tract should be studied. A bibliography of 88 titles follows the article. A. Goss.

Solieri, S.: The Increased Resistance of the Peritoneum to Infection in the Treatment of Acute Appendicitis (Die gesteigerte Widerstandsfähigkeit des Peritoneums gegen Infektion bei der Behandlung der akuten Appendicitis). Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, 807.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

By previous research the author has shown that a prophylactic intraperitoneal injection of physiological salt solution increases the resistance of the peritoneum to bacterium coli infection sixteen-fold. and that the injection of a sterile culture of bacterium coli has a somewhat more pronounced effect in the same direction—the resistance being in-

creased twenty-fold.

The author has performed a new series of experiments and determined (1) that the toxin of bacterium coli introduced into the peritoneal cavity by chemotaxis and phagocytosis causes a stronger local immunizing effect than nucleinic acid; (2) that bactericidal substances (alexins and agglutinins) appear in greater quantities in the blood of animals into whose peritoneum bacterium coli toxin has been injected than in the blood of those injected in a similar way with nucleinic acid; (3) that in the blood of patients with peritonitis from appendicitis, substances are present that agglutinate the colon bacilli that have infected the peritoneum. As a result of this latter observation, and based on general pathological considerations, the author has resolved to go farther in the primary closure of appendix wounds than he has hitherto done. He reports his 27 cases in which there were more or less pronounced symptoms of peritoneal reaction, but no peritonitis, and in which there was healing by first intention, and gives a table of the results.

Zahradnicky, F.: Results of Appendicitis Operations for 1913 and for a Period of Sixteen Years (Ergebnisse der Appendicitis-operationen des Jahres 1913 and Ergebnisse derselben während 16 jähriger Tätigkeit.) Čas. lék. česk., 1914, liii, 535. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In 1913, 137 cases of appendicitis were operated upon, with 4 deaths, or 2.9 per cent. Of 15 internally treated, 2 cases which were in extremis from peritonitis died, 13.3 per cent. One hundred and one were operated on during the attack, 53 of them early, before the seventy-second hour, and one died, 1.9 per cent. Of the 48 operated upon in the intermediary stage 3 died, 6.3 per cent.

The intermediary operations have increased, because the cases are more severe and because on account of improved technique more patients are operated on in this stage; the mortality has sunk from 20 to 6.3 per cent. Thirty-six cases were operated upon between attacks. Of the 53 early

cases 10 had gangrene of the appendix with diffuse suppurative peritonitis; no deaths resulted; 15 had gangrene with circumscribed peritonitis, and one died of post-operative ileus, 6.6' per cent. Among the intermediary cases, 6 had diffuse peritonitis, and all of them recovered, and 24 had circumscribed peritonitis, with three deaths, or

12.5 per cent.

In 16 years, 641 cases were operated upon, with 35 deaths, or 5.4 per cent; 342 during the attack, with 34 deaths, 9.9 per cent; 215 early cases, with 7 deaths, 3.2 per cent; 127 in the intermediary stage, with 27 deaths, 21.4 per cent; 299 interval operations with 1 death from pulmonary embolism. Among the early cases there were 47 of diffuse peritonitis, with 4 deaths, 8.5 per cent; 94 of circumscribed peritonitis with three deaths, 3.1 per cent. Among the intermediary cases there were 30 of diffuse peritonitis with 24 deaths, 80 per cent.

The deaths were chiefly among the younger patients and in the cases that came for operation very late. Fifty-six had circumscribed peritonitis

with three deaths, 5.3 per cent.

The circumscribed processes do not have a markedly higher mortality in the intermediary stage, but the cases of diffuse peritonitis at this time have an enormously high one, 80 to 100 per cent. In spite of the fact that the interval operation is practically without danger, and the results of operation in circumscribed processes in the intermediary stage are not markedly worse than in the early stage, every case of severe appendicitis should be operated upon as early as possible, in order to prevent the appearance of diffuse peritonitis, which has a relatively favorable prognosis in the early stage, but a very bad one in the intermediary stage. Circumscribed cases should be operated upon in the intermediary stage rather than delayed for the subsidence of the attack. However, cases of diffuse peritonitis with poor general condition should not be operated upon at this stage; in the earlier years 24 cases were operated upon with 100 per cent mortality; in recent years, 6 cases with no deaths.

In the early stages it is impossible to determine whether the intra-abdominal changes are mild or severe in degree; but as in two-thirds of the non-operated cases there are recurrences, operation in mild cases at least prevents the possibility of severe recurrences. More than half of the cases operated upon in the interval had abscesses, perforations, or severe adhesions, so that the operations were very difficult. Of recent years such changes have been more unusual, because generally the severe cases have been operated upon during the attack.

The post-operative complications observed were: 8 intestinal fistulæ, 6 of which healed spontaneously, 4 abdominal hernias, in 3 of which radical operations were performed; and, in spite of the fact that half of the cases were drained, 9 cases of ileus from ad-

hesions, with 4 deaths.

True recurrence can take place only if the appendix is not completely removed. The pseudo-

recurrences were typhilitis or secondary abscesses in the neighborhood of the appendix; these generally recovered spontaneously, but in 4 cases late exacerbations were observed; one recovered spontaneously after 3 and one after 4 years; one had a suppurative fistula and was cured by drainage after six months, one after two years.

Etiologically, the author thinks appendicitis is an infectious disease; family predisposition (Melchior) plays a subordinate rôle.

KLAUBER.

Pfahler, G. E.: The Study of Chronic Intestinal Stasis by Means of the Röngten Rays. Surg., Gynec. & Obst., 1914, xix, 658.

While the diagnosis of chronic intestinal stasis can be suspected from clinical symptoms, it can be determined only by means of the röntgen rays.

By Surg., Gynec. & Obst.

Pfahler's technique is as follows: Without previous purgation or starvation, one hour after the patient has had breakfast he is given, as recommended by Jordan, one glass of water containing 4 ounces of bismuth subcarbonate and one-half ounce or more of sugar of milk. By manipulation of the stomach the bismuth can be made to mix with the food in the stomach. While this is not the best mixture for the study of gastric ulcer, carcinoma, or duodenal ulcer, gross defects in the stomach can be outlined. The patient is then examined fluoroscopically in the vertical and horizontal positions at 3, 6, 9, 12, and 24 hour intervals, or as many as the röntgenologist deems necessary.

Retention in the ileum cannot be looked upon as stasis unless it be present at the end of 9 or more hours. Stasis in the ileum may be due to kinks, adhesions, and spasmodic or organic constriction of the ileocæcal valve. It may also be due to a patulous ileocæcal valve which permits reversed

peristalsis.

Stasis in the cæcum and ascending colon is recognized by retention of the bismuth mixture in this portion of the bowel 24 hours after it is given. The stasis may be due to a kink at the hepatic flexure, or to adhesions secondary to gall-bladder disease, or

to a perforated gastric or duodenal ulcer.

Stasis in the ascending or transverse colon may be due to stenosis at the splenic flexure, which, in turn, is usually due to kinks or adhesions. Obstructions at the splenic flexure and stasis in the transverse colon may also be caused by splenic loops. These loops consist of an elongation of the colon in the region of the splenic flexure which permits an accumulation of gas and a twisting of the colon, causing temporary blocking of the progress of the colonic contents.

Obstruction to the flow in the descending colon may be due to spasms, adhesions, neoplasms, kinks, or twists. Kinks in this portion of the bowel are frequently due to a redundant sigmoid. The method by which adhesions, spasms, kinks, neoplasms, etc., in any portion of the bowel are differentiated is detailed in full in the original article.

Stasis within the rectum may be due to spasm of the anal sphincter, to actual organic obstruction, or, more commonly, to a loss of sensation of the desire to stool.

In the study of intestinal stasis the bismuth meal should be followed through the intestinal tract, and this should be supplemented by giving an enema and making a careful fluoroscopic and röntgenographic examination. Colonic injections show best the various organic constrictions of the bowel, the presence of loops, and the presence or absence of a patulous ileocæcal valve.

Case, J. T.: A Critical Study of Intestinal Stasis, Including New Observations and Conclusions Respecting the Causes of Heal Stasis. Surg., Gynec. & Obst., 1914, xix, 592. By Surg., Gynec. & Obst.

While doubting the advisability of many of the radical operations for the relief of constipation, especially those based upon the presence of ileal kinks, Case urges the importance of recognizing the danger of continued intestinal stasis, and of relieving it. So-called Lane's kinks and other adhesions of the terminal ileum are recognized as occasional causes of ileal stasis. In the majority of Lane's kinks found in Kellogg's surgical clinic at the Battle Creek Sanitarium, there has been no obstruction discernible, and the kinks have been conceded to be of secondary importance.

Spasm of the ileocæcal sphincter is also recognized as a probable cause of ileal stasis, spasm of this sphincter being analogous to spasm of the pyloric, cardiac, and anal sphincters, and probably due to

similar causes.

In the author's opinion, the majority of cases of ileal stasis are due, not to Lane's kink, even though it may be present, but to a new and additional cause of ileal stasis; viz., incompetence of the ileocæcal valve. More than five hundred cases of ileocæcal valve incompetency have been studied, and in practically every case there have been all the clinical evidences of alimentary toxæmia. Ileocæcal valve incompetency has been proved, not only by the passage of a bismuth enema through the ileocæcal valve into the ileum, but also by the observation made in more than fifty cases where ingested food regurgitated from the cæcum into the ileum.

Still further evidence of the importance of the normal competence of the ileocæcal valve is afforded by operative findings. In nearly one hundred cases operated on by Kellogg for repair of the ileocæcal valve, post-operative studies have shown a very marked diminution of the ileal stasis, with reduction and in most cases complete disappearance of the

clinical evidences of stasis.

The splendid results which have been accomplished in certain extreme cases by radical surgical treatment, such as short-circuiting with or without removal of the colon, are noted, but Case takes a stand against the tendency to radical operative interference for the relief of intestinal stasis. He

concludes that short-circuiting and colectomizing operations are hazardous; appendicostomy has been unsatisfactory; the colon is more of a misused than a useless structure; non-surgical treatment, especially dietetic, should be given a thorough trial.

He believes it reasonably proved that incompetency of the ileocæcal valve does account for the ileal stasis in a considerable proportion of cases of intestinal toxæmia, including many cases of well-developed Lane's kinks; and hence, if any operative procedure at all is indicated, a simple operation for repair of the incompetent valve, such as the one published by Kellogg, is sufficient, except in very rare cases. Thus far this operation has usually been performed in connection with some other surgical procedure which required the opening of the abdominal cavity.

Rauchenbichler, R. von: Primary Resection of the Large Intestine (Zur Frage der primaren Dickdarmresektion). Arch. f. klin. Chir., 1914, cv, 181. By Surg., Gynec. & Obst.

The author discusses the value of primary onestage resection of the large intestine in comparison with the operations in two or more stages that seem to be preferred by most authors. He concludes that the one-stage operation is contra-indicated in acute ileus, but that in chronic ileus there is no contra-indication to this procedure. The operative mortality with this method of operation is not greater than that of the operations in several stages, and it is to be preferred from the fact that it is a one-stage operation and therefore requires less loss of time for the patient. In many cases it admits of the radical removal of extensive foci of disease that, because of their extent, could not be reached by other methods. In these cases of extensive disease the adherents of the several stage methods are obliged to be content with palliative operations, such as entero-anastomosis and the making of an artificial anus. Therefore the results obtained by one-stage operation must be regarded as better than those of the operation in several stages. Histories of 37 cases support these views.

Jones, D. F.: Cancer of the Rectum. Boston M. & S. J., 1914, clxxi, 739. By Surg., Gynec. & Obst.

The author reiterates that carcinoma of the rectum is not a benign disease, and quotes Harrison Cripps' figures; i.e., of 107 cases operated upon out of 445 examined only 9 per cent of the total number were alive five years after the operation. At the Massachusetts General Hospital only 4 per cent of the total number entering the hospital were alive without recurrences three years after operation.

The measures advocated to improve the unusually fatal character of the disease are: (1) to warn the public as to the seriousness of rectal bleeding; (2) to teach the physician that the condition demands a rectal examination; (3) the idea must be spread that an ileac colostomy or sacral anus is not such a terrible thing as it is generally believed to be.

The author considers the histological characteristics of the tumor of considerable importance and quotes figures which show that all the cures for three years or over belong to the adenocarcinoma group. Almost all the solid forms recurred within a year, the mixed and colloid also recurring sooner or later.

In considering the operative procedures, the only posterior operation which has stood the test of time is the Kraske, but here the lymphatics cannot be reached above the promontory, and the operation is usually carried out without knowledge of conditions in the abdomen. But Hochenegg's statistics of 18.9 per cent mortality and 20 per cent of fiveyear cures make it a rival of any more extensive

operation.

The author favors the combined or abdominoperineal operation, in which, if there is no contraindication, such as metastases in the liver or extensive glandular infection, the rectum, parirectal fat, with all glands in the pelvis, and the mesentery of the sigmoid, are freed en bloc, and a permanent colostomy made. In the second step the dissection is carried up from the anus to meet that made from the abdomen and the whole mass is brought out through the perineal wound. The following esentials in operation are mentioned: First, to immediately tie off the inferior mesentery artery and separate the mesentery of the sigmoid from the posterior wall. This makes it possible to get all the lymphatics along the superior hæmorrhoidal and inferior mesenteric arteries, to leave the vascular arches, and to give an almost bloodless dissection. Second, if the sigmoid is to be brought down through the sphincter, cutting the outer leaf of peritoneum along the descending colon and freeing the splenic flexure will insure a sufficient length of bowel.

The author believes the sacral operation is superior to the perineal because (1) it gives a better exposure; (2) it permits a wider extirpation of the surrounding tissue; and (3) it is easier to do an endto-end suture, if that method is used. In low-lying carcinomata it is essential to get a wide dissection removing the sphincter, ischiorectal fat, and levator

ani muscle.

As this operation is too tedious for most patients to stand, it has been done in two stages. In the first stage instead of dropping the sigmoid back into the abdominal cavity, the upper portion is brought out through a rectus incision, and after twentyfour hours is cleansed frequently from above and below. The second stage is carried out five to seven days later as in the single-stage operation. It is believed this two-stage operation will be of great value in the treatment of feeble patients, and if the second stage is done under spinal anæsthesia will reduce the mortality 15 to 20 per cent.

In all cases in which the growth is within three inches of the anus it is deemed essential that a permanent colostomy be made. If the growth is three or more inches from the anus the sphincter may be retained by bringing the end of the sigmoid down. The objections to this method are the increased danger of sepsis from leaking fæcal matter, the temptation to section the bowel too close to the growth, and the fact that extensive dissection here is likely to leave the sphincter paralyzed.

E. K. ARMSTRONG.

#### LIVER, PANCREAS, AND SPLEEN

Rosenow, E. C.: Bacteriology of Cholecystitis: Its Production by Injection of Streptococci. J. Am. M. Ass., 1914, lxiii, 1835.

By Surg., Gynec. & Obst.

Rosenow points out that heretofore the bacteriology of cholecystitis has been largely the bacteriology of the gall-bladder, and not of the tissue of the gall-bladder wall. He studied 20 cases. examining the fluid contents of the gall-bladder, the center of the gall-stones, and particularly parts of the wall of the gall-blader. Cultures from the wall of the gall-bladder were positive in all but 5 cases. Of the 24 positive cases 21 showed streptococci and in pure culture in 10 cases. Associated organisms were colon bacillus, bacillus welchii, bacillus mucosus, diphtheroid bacillus, and a fusiform bacillus.

The center of the gall-stones were examined in 30 cases and only 2 found sterile. Streptococci were found in all but 3 cases, and in pure culture in 14 cases. Other organisms were found in association about the same as in the time work.

Adjacent lymph-glands were examined in 5 cases. Streptococci were found in pure culture in 3 cases and in association with the bacillus welchii in the fourth case. Streptococci were found in the fluid in acute cases.

Animal inoculation when given in varying doses produced cholecystitis in nearly every case, the severity of the lesion varying with the severity of the case from which the organism was isolated. Portal injection failed to produce lesions.

In animals which survived the injection some time the beginning formation of gall-stones containing numerous streptococci was seen. author describes the cultural, morphological, and staining properties of the streptococci and their behavior on animal inoculation. He concludes that streptococci are the cause of cholecystitis in man far more frequently than is believed, and this serves to explain the good results reported by some as following cholecystitis in cases of myocarditis, F. H. FALLS. arthritis, and other conditions.

Jurasz, A. T.: Paravertebral Anæsthesia in Gall-Stone Surgery (Die Paravertebralanæsthesie im Dienste der Gallensteinchirurgie). Zentralbl. f. By Surg., Gynec. & Obst. Chir., 1914, xli, 1409.

The author recommends paravertebral anæsthesia in gall-bladder surgery in cases in which a general anæsthetic is contra-indicated. In two cases operated upon by Payr for gall-stones this method of anæsthesia was used. Both cases had marked

cardiac dilatation. Paravertebral anæsthesia with 5 ccm. of a 1 per cent novocaine solution from the sixth thoracic to the first lumbar segment rendered the operation entirely painless in each case. Anæsthesia of the abdominal wall, peritoneum, and right-sided intra-abdominal organs was complete after 10 minutes. Full technical directions for making the paravertebral injections are given by the E. P. ZEISLER. author.

Jenckel: Pathology and Treatment of Acute Necrosis of the Pancreas (Zur Pathologie und Therapie der akuten Pankreasnekrose). Deutsche Zischr. f. Chir., 1914, cxxxi, 253. By Surg., Gynec. & Obst.

Jenckel gives histories of 13 cases of acute necrosis of the pancreas, and in addition to describing the symptomatology, which varies greatly in the individual cases, discusses the various theories as to its pathogenesis. He concludes that the disease is undoubtedly due to the action of a toxin, but does not decide between the view of Polya and Eppinger, who hold that besides autolytic processes the addition of intestinal kinase activates the proteolytic ferment in the pancreas and that the activated secretion causes circumscribed necrosis, and that of Lattes, who contends that the intoxication is the result, not the cause, of the necrosis. Polya supports his opinion that the harmless trypsinogen is converted in the gland into trypsin by showing that the injection of active trypsin into the duct may cause necrosis of the pancreas and death. The injection of intestinal fluid or macerated intestinal mucous membrane has the same effect. Back flow of intestinal contents into the duct can not take place spontaneously, and the real cause of the activation of the secretion is the penetration of microörganisms into the duct; death, however, is not due to the bacteria but to the resultant activa-

Jenckel maintains that the areas of fatty necrosis in the omentum and spleen are by no means so important as they have been considered by most authors. They have absolutely no etiological significance, but are completely harmless. Their only importance is diagnostic; even here they are not pathognomonic: their absence does not prove that disease of the pancreas does not exist. In some of his severest cases they were not found. The latest The latest research seems to show that the hæmorrhage is the cause, not the result, of the necrosis; the author thinks it probable that it may be either, but that it is important to know that hæmorrhage may cause fatal necrosis. In only three of his own nine cases was the disease of the pancreas associated with disease of the biliary tract.

tion of the secretion which can be demonstrated

in vitro. Lattes holds that the activation is not

caused by mixture with intestinal contents but by

autolysis of pancreatic tissue.

Early operation is the best treatment, but even with recent progress in surgical technique the prognosis in this disease is very bad, chiefly due to the

fact that it is almost impossible to make an early diagnosis. Unfortunately, even the Abderhalden reaction does not give uniform results in disease of the pancreas, and the greatest desideratum is to find a reliable means of diagnosis.

Roblee, W. W.: Splenectomy for Primary Pernicious Anæmia. Surg., Gynec. & Obst., 1914, xix, By Surg., Gynec. & Obst.

Roblee reports the results during the first two

months following the operation:

The first case, a male, aged 42, had been ill for one year. At the time of operation, May 18th, the patient had been confined to bed for five weeks. Blood examination showed erythrocytes 1,500,000, hæmoglobin 40 per cent, color index 1.4, with the characteristic changes in size and shape. Operation was not followed by appreciable shock, but the spleen proved to be slightly larger than normal. The changes in the blood were as follows:

May 22. Red cells 1,164,000, hæmoglobin 40

per cent.

May 26. Red cells 1,400,000, hæmoglobin 50

June 3. Red cells 2,000,000, hæmoglobin per cent.

June 16. Red cells 4,000,000, hæmoglobin 80

July 10. Red cells 4,500,000, hæmoglobin 90 per cent.

There was a marked improvement in the patient's

general physical condition.

The second case, a male, aged 57, had the same history and the same condition as Case 1. At operation, May 11th, the spleen was normal in size. Blood examination showed:

May 11. Red cells 1,250,000, hæmoglobin 65 per cent.

After operation the following changes were noted:

May 15. Red cells 1,620,000, hæmoglobin 65 per cent.

May 19. Red cells 1,900,000, hæmoglobin 65 per cent. May 27. Red cells 1,500,000, hæmoglobin 65

per cent. June 24. Red cells 2,560,000, hæmoglobin 80

per cent. July 10. Red cells 2,880,000, hæmoglobin 85

per cent. From a review of the literature and from his

experience Roblee concludes as follows: 1. The operation does not present any unusual difficulties even when the patient is very ill.

 The improvement is immediate and striking.
 In view of the clinical variations of this disease, the surgeon is not warranted in promising a perma-

4. The improvement is so striking that a hope of permanent cure can be indulged in. The operation is worthy the serious consideration of all medical and surgical practitioners.

Mühsam: What Can Be Accomplished by Splenectomy in the Different Forms of Anaemia (Was erreichen wir mit der Milsexstirpation bei den verschiedenen Formen der Anämie)? Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author reviews the results of splenectomy in anæmia. Numerous observations extending over years show that Banti's disease can be cured by splenectomy. In infantile splenic anæmia the operation brings about recovery in seemingly hopeless cases. The author cites one of his own cases of Banti's disease that has been under observation for two and three-fourths years since the operation, and cases of infantile splenic anæmia by von Graf, Wolff, and Turner. Hæmolytic icterus, first operated upon by Banti, can be cured by splenectomy. Banti's case has been under observation 8 years. Eppinger and Decastello in-dependently instituted this treatment of pernicious anæmia, and in a number of cases got very good These results can hardly be called cures: rather they are improvements which persist for varying lengths of time and may be followed by a worse condition, which is to be regarded as a recurrence. Mühsam's own observation includes 15 cases, 8 of which are alive. Five died soon after the operation, 2 of pneumonia, 2 (hæmorrhagic diathesis) of parenchymatous hæmorrhage, and one of heart failure. Two died later, one of a myelitis that she had had before, and one of the anæmia which was not improved by the operation.

KATZENSTEIN.

#### MISCELLANEOUS

Wiedhopf, O.: Splanchnoptosis and Its Treatment (Die Splanchnoptose und ihre Behandlung). Deutsche Ztschr. f. Chir., 1914, cxxviii, 1.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

After describing the various methods of operation for splanchnoptosis, none of which are generally recognized as successful, the author points out that the study of this condition should be directed toward discovering a uniform etiology, upon which a uniform treatment may be based. Almost all of the methods heretofore used were based upon the false assumption that the fixation of the abdominal organs was due to the suspensory ligaments and that ptosis

was due to weakening of these ligaments.

Wiedhopf thinks the etiology of splanchnoptosis is a disturbance in balance between the volume of the abdomen and its contents, in the direction of a relative increase in volume. The treatment, therefore, should consist only of measures which overcome this disproportion, either by increasing the contents (feeding cure) or by decreasing the volume. The latter object may be attained either by conservative methods, such as strengthening the muscles or the use of abdominal binders, or by surgical operations either on the abdominal wall or plastic operations on the floor of the pelvis. The author describes his own method of operation, which consists in doubling the posterior sheath of the rectus and laying the recti muscles one over the other. Fixation of individual organs is only a symptomatic treatment.

## SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Cohn, I.: Bone Regeneration: An Experimental Study. Am. J. Surg., 1914, xxviii, 413.

By Surg., Gynec. & Obst.

Cohn reviews the literature of the growth of transplanted bone. He believes that if the literature were taken as an index of the sentiment of the profession one would be led to believe that periosteum lives and that the dead bone is replaced by vascular granulation tissue from the periosteum. From his work he is led to believe this is not the case.

The main points of variance among the authorities are: (1) Has the free bone-transplant an inherent osteogenetic function? (2) Has the periosteum an inherent osteogenetic function? (3) Is the periosteum necessary for bone growth? (4) Is the periosteum a limiting membrane?

Dogs, cats, and rabbits were used in the experiments, ether anæsthetic being employed. Pieces of trephine button, free of periosteum, were trans-

planted in the rectus muscle and in the omentum. Six weeks afterward microscopic examination revealed the presence of hard masses (bone) in the site of the transplant.

Subperiosteal resection of the rib was done and fragments of bone were placed in the rectus muscle, omentum, and spleen. Five weeks later it was found that the bone was still where it had been transplanted. There was no indication of absorption after five weeks. Direct signs of bone formation were found in the spleen. The Hawship's lacunæ on the surface were well marked; lying in lacunæ were osteoblasts.

The best evidence of active bone proliferation was seen in the rectus muscle.

In two instances the transplants free of periosteum were placed in the anterior chamber of the eye of a cat. The pieces of bone-transplant are reported as increasing in size.

The results of the experiments, as reported, show that small free bone-transplants do not always die, and that they may live and grow.

A strip of periosteum which remained attached above was elevated from the shaft and made to surround a muscle bundle, after which the divided ends of the periosteum were sutured. At the end of six weeks no bone growth had proceeded from the elevated periosteum. Periosteum bound about the carotid, placed twice in the anterior chamber of the eye of a cat, and into the rectus muscle, showed no growth of bone.

The conclusions are as follows:

1. Small bone-transplants are osteogenetic, not osteoconductive.

2. Periosteum has no osteogenetic function, but

is rather a limiting membrane.

3. Periosteum is not essential to repair in the defects of bone. H. B. THOMAS.

Haas, S. L.: Regeneration of Cartilage and Bone; a Special Study of These Processes as They Occur at the Chondrocostal Junction. Surg., Gynec. & Obst., 1914, xix, 604.

By Surg., Gynec. & Obst.

A description is given of the structure of cartilage and bone, and attention is directed to the close developmental relationship that exists between these two tissues. The author divides his subject into three parts as follows: (1) the regeneration of cartilage; (2) the regeneration of bone; and (3) the regeneration of bone and cartilage at the chondrocostal junction. The findings and conclusions are based upon 57 experiments performed upon the ribs

and costal cartilages of rabbits.

1. A short review of the recent literature is given regarding the regeneration of cartilage and various theories are discussed. The experiments consisted of the subperichondrial resection of one to two centimeters of the costal cartilages and the observations were made after 5, 10, 15, 20, 23, 30, 36, 38, and 40 days, respectively. In each instance regeneration of cartilage was found, varying in amount according to the length of time that had elapsed. He concludes that the chief source of regeneration of cartilage is from the perichondrium, and that it takes place by a proliferation of all its cellular elements. There is some evidence in favor of the view that the connective tissue is also transformed into cartilage under the influence of the stimulation of the neighboring cartilage or perichondrium. extent of the resected cartilage exerts no influence on the regeneration, nor does the regenerated cartilage show any tendency to undergo calcareous changes. If the perichondrium is removed with the cartilage there is complete absence of newformed cartilage.

A review of articles on regeneration of bone that have appeared since the author's previous article on the subject shows that there is still no uniformity of opinion regarding the manner of the regeneration of bone. One of the causes for this variation is the failure to define exactly what is considered as In this article a minute description periosteum. with microphotographs of the periosteum makes clear the author's conception of that membrane. The experiments consisted of the subperiosteal resection of a piece of rib from 1 to 2 centimeters in length; the observations extending over a period of 5, 11, 15, 26, and 29 days, respectively. From this study he concludes that the periosteum is directly and actively concerned in the regeneration of bone. In the very early stages the periosteum proliferates to form a cartilaginous tissue which is later transformed into bone. In the experiments the regeneration of bone also took place from the marrow and the cortical bone, but in a more limited degree and at a later period than from the peri-There was considerable evidence that the cartilage-cell could change directly into a bonecell besides acting merely as a directing framework for the ingrowing bone.

In the experimental work on the regeneration of bone and cartilage at the chondrocostal junction, a subperiosteal resection was first made on the osseous side of the junction, so that there was a strip of periosteum with cartilage at one end and bone at the other end. In this case the regenerated tissue was bone. A resection was then made on the cartilaginous side of the junction, so that there was a strip of perichondrium with bone at one end and cartilage at the other end. In this case the newformed tissue was bone. Next, a subperiosteal and subperichondral resection was made so as to include the junction, thus leaving a strip of periosteum on one side and a strip of perichondrium on the other side. Following such a resection there was regeneration of cartilage within the limits of the perichondrium, and bone within the limits of the periosteum; hence, Haas concluded that the periosteum and the perichondrium were the chief factors in determining the regeneration of bone and cartilage respectively. In the older stages there was almost complete restoration of the chondrocostal junction. The question was raised as to whether the chondrocostal junction was to be considered as an epiphysis or not. If it was to be so considered, even in a limited degree, then its restoration is all the more interesting in view of the fact that the epiphysis is so susceptible to injury.

Coley, W. B.: Some Problems in the Early Diagnosis and Treatment of Sarcoma of the Long Bones. Ann. Surg., Phila., 1914, lx, 537. By Surg., Gynec. & Obst.

Coley lays special stress on the early diagnosis, on a carefully obtained history, and also on palpation which he regards of inestimable value. Persistent severe and localized pains should lead to suspicion

of malignant growth.

In differential diagnosis it is important to note that sarcoma in the early stages rarely involves joints and synovial membranes, distinguishing it from tuberculosis. Exostoses are slower in growth; are without pain, are harder, more uniform in consistency, and are often pedunculated. Myelomata are distinguished usually by the globular expansion of a limited portion of bone without deposition of new bone on the outside and without a tendency to

involvement of the shaft. These tumors as a rule are of slow growth; occasionally, however, they grow very rapidly and many even metastasize.

The X-ray findings must be interpreted with great care. In periosteal sarcoma there is a tendency of the new bone to form spicules standing out at right angles to the shaft of the bone. While rather characteristic this is not pathognomonic. In myositis ossificans there is usually, but not always, a sharply defined periosteal line which can generally be relied upon in differentiating it from periosteal sarcoma. In case of doubt, repeated measurements and X-ray examinations at two-week intervals will

be of great value.

While exploratory incision to determine the character of the growth is condemned by many, Coley believes it is permissible in doubtful selected cases, but he advises against it as a routine measure. After comparing his own statistics with those of Gask at St. Bartholomew's Hospital and Maybury at St. Thomas's, Coley concludes that treatment of sarcoma of the long bones with the mixed toxins of erysipelas and bacillus prodigiosus has decided advantages. He reports twenty-seven cases out of one hundred and twenty-four treated, as being well three or more years after treatment. In eleven cases a limb was saved by the preliminary use of toxins.

Coley believes it justifiable to wait two or three weeks before sacrificing a limb to try the effects of the toxins. Even if the treatment fails to control the growth of the tumor, and subsequent amputation is necessary, the preliminary use of toxins has unquestionably had a modifying effect upon the malignancy of the tumor in some cases. Several apparently inoperable cases improved to such an extent that operation could be undertaken. The greatest value of the toxins, he thinks, lies in their judicious combination with conservative treatment. In the myeloid type, especially, curetting or partial resection followed by toxins seems sufficient. Implicit reliance should not be placed upon the negative report of the pathologist, especially when conflicting with strong positive clinical and X-ray findings.

Coley's statistics are unique in that they include a very large number of advanced cases in which the disease had progressed so far that the condition was inoperable and apparently hopeless when the patients came under his observation. Many case

histories and illustrations are given.

F. J. GAENSLEN.

Landon, L. H.: Ostitis Fibrosa Cystica. Ann. Surg., Phila., 1914, lx, 570. By Surg., Gynec. & Obst.

The author reports a very interesting case of bone cyst affecting only one bone, one of cyst of the metacarpals, and several cases of multiple cyst. He discusses the differential diagnosis of benign cyst, of sarcoma, specific dactylitis, and osteomalacia. Trauma is undoubtedly the initial factor in most cases of benign cyst. Fracture is the chief feature and one of the most common symptoms of cyst. Operation is usually advisable and should

consist usually in simple curettement, crushing in of the walls, and primary closure of the wound. Fractures usually heal promptly and the cure of the cyst may result.

George I. Bauman.

Elmslie, R. C.: Fibrocystic Disease of the Bones. Brit. J. Surg., 1914, ii, 17. By Surg., Gynec. & Obst.

In this extensive general survey of the subject of fibrocystic disease of the bones the pathological features which heretofore have been of chief concern are brought into correlation with its clinical features, and an attempt is made to arrive at a rational plan of treatment. There is a brief history of the subject and its separation from other forms of cysts such as those occurring in Recklinghausen's disease, Paget's disease, myeloid sarcoma, enchondromata, and osteomalacia. The process may be summarized as follows:

Cysts occur in many of the long bones as well as rarely in the skull and short bones. They may be single, or multiple and simple, or may be surrounded by an area of diseased bone, the latter showing the condition described as osteitis fibrosa. He points out the uncertain significance of microscopic changes in bones, and criticizes Recklinghausen's attempt to group together rickets, osteomalacia, fibrous osteitis, osteitis deformans, and bone cysts because of their pathological resemblances, when clinically they are widely at variance. He classifies the lesions according to site rather than according to their macroscopic and microscopic characters, and tries to establish certain clinical types.

Lesions of the upper end of the humerus, which is the most frequent site of the disease, are considered first. A number of cases are cited with accompanying röntgenograms of the patients' condition before operation and other plates showing the results three years later. The pathological findings of two specimens from excised ends of humeri are presented and a number of cases from the literature cited to bring out all of the points typical of the disease. The condition may be summarized as follows, which summary applies quite generally to cysts

in other locations.

Clinically most of the cases occur during the growing period and attention is drawn to the disease by the occurrence of a pathological fracture. Next to fracture are pain and swelling, which come on gradually. Frequently the process has been attributed to an injury, but very probably the existence of the cyst predisposes to injury by weakening the bones. The upper end of the humeral shaft is affected, but in some instances it may extend well down toward the middle of the bone. The fact that the epiphysis is never involved is often a valuable point in distinguishing it from myeloid sarcoma. There has been only one report of the disease in the lower end of the humerus. X-ray examination at the seat of the fracture or swelling shows the cyst in the center of the bone with the cortex thinned and expanded but never completely destroyed. Its cavity may be unilocular

but is most often multilocular, the various cavities being separated by thin bridges of trabeculated bone. There is no sclerosis of the surrounding bone and very little lamellar bone formation from the overlying periosteum, which fact aids in distinguishing it from a tuberculous or chronic osteomyelitic cavity. Usually the diagnosis can be made from these points, but occasionally an exploratory opera-

tion is necessary.

Pathologically the changes are quite complicated but fairly uniform. The contents are always fluid varying from serous to hæmorrhagic and they sometimes contain cholesterin crystals. Cultures of this fluid have practically always been negative. The cyst wall is variable; usually it consists of a smooth narrow lining of fibrous tissue which has a necrotic blood-stained inner layer and merges externally into a fibrous marrow which fills the porous spaces of the neighboring bone. The bone itself shows active absorption by osteoclasts. The fibrous marrow contains giant cells, osteoid tissue, isolated patches of cartilage, and hæmorrhages. usually at least a thin remnant of the cortex left and a small amount of bone deposit in the fibrous marrow and along the periosteum. The giant cells are undoubtedly osteoclasts, but when closely packed in a spindle-celled stroma they give the appearance of a myeloid sarcoma.

The treatment has been variable. In many cases the occurrence of a fracture has set up an osteogenesis which has led to healing not only of the fracture but also of the cyst. Non-union of fractures through cysts has been rare. Undoubtedly the best form of treatment is to open and thoroughly curette out the lining membrane after which the cavity is closed with drainage or allowed to fill with an aseptic blood-clot. Osteogenesis is thereby set up and in a number of months the cyst cavity is filled in. Occasionally a second curettage is necessary. Resection either subperiosteally or particularly with the periosteum is an unnecessarily severe

procedure.

A few cases of cysts of the clavicle, ulna, and

radius are cited.

A larger number of cysts of the femur than of the humerus have been recorded, but the group is not so clear cut, the clinical picture being more complex. There is often a large expansive tumor of the bone and in many instances there is an associated affection of other bones. He reports one case of a solitary cyst with thinning of the cortex and a thin lining as in case of the humerus. Most of the cysts are multilocular and very small, constituting only a minor part of the mass of fibrous tissue in which they are embedded. Sometimes the bone is destroyed and expanded and the space is filled entirely with fibrous tissue. The upper end of the bone is most often involved but a few cases forming an illdefined group of the lower end are cited. Some of them are large cysts which resemble the myeloid sarcomata rather closely. Pathological fracture frequently results. Healing is usually prompt but

subsequent bowing of the bone may occur. An apparent subdivision of the translucent area by trabeculæ is much more frequent in the femur than in the humerus.

The cysts of the tibia form a well-defined group. They occur in young people. Attention has been called to them by injury; pain and swelling have been the prominent symptoms; the cysts have been lined with an incomplete fibrous wall with occasional patches of cartilage. Giant and spindle cells have given the appearance of myeloid sarcoma in some

cases. Curettage has resulted in cure.

Most of the cysts described as being in the fibula undoubtedly have been myeloid sarcoma. The carpal and tarsal bones are very rarely affected. They are more frequent in the metacarpals, metatarsals, and phalanges, but the commonest cause of cysts in this location is degeneration of enchondromata. In a very few instances the skull, pelvis, and patella have been involved. No record is made of cysts of the spinal column.

Multiple lesions of the bones are not so uncommon, the tibia, femur, and humerus being most frequently involved. The changes in the individual bones resemble very closely those found in the simple, single affections. The author excludes from consideration multiple cysts due to von Recklinghausen's disease, Paget's disease, osteomalacia, and multiple

myeloid sarcomata.

A mistake which occurs frequently is the interchangeable use by authors of the terms myeloma and myeloid sarcoma. Myeloma should be restricted to those tumors of the bones which arise from the blood-forming or hæmopoietic cells of the marrow, as myelocytes, plasmocytes, lymphocytes, etc., whereas myeloid sarcoma designates a tumor arising from the connective-tissue element of the medullary cavity of a bone, and is practically devoid of blood-forming elements.

D. B. Phemister.

Colvin, A. R.: Diagnosis of Joint Diseases. Wis. M. J., 1914, xiii, 217. By Surg., Gynec. & Obst.

The author emphasizes the necessity of careful study and interpretation of joint movements. He believes that the same systematic clinical investigation that is employed in visceral disease is essential in the diagnosis of joint diseases. To this end the symptomatology and pathology of diseases of organs and tissues remote from the joints must be taken into consideration. In order to comprehend the importance and significance of referred and radiating pain a practical working knowledge of the anatomy and physiology of the central and peripheral nervous systems is necessary.

R. O. RITTER.

Duffy, R.: Surgical and Conservative Treatment of Joint Tuberculosis. J. Fla. M. Ass., 1914, i, 129. By Surg., Gynec. & Obst.

Duffy discusses the operative and non-operative methods in the treatment of joint tuberculosis.

Relative to the use of tuberculin there is a great diversity of opinion, but it is generally agreed that its use in small doses-I to 1000 mg.-in selected

cases produces no ill effects.

Röntgenotherapy requires weeks and months of treatment, and is therefore slow in producing results. Duffy mentions the results of Bernhard and Rollier, whose work in the Alps has convinced the profession of the great usefulness of heliotherapy in joint tuberculosis. The only drawback to the treatment is its great cost.

In the discussion of passive hyperæmia the results of Bier are cited. After long experience the best results were obtained by producing stasis one hour

twice daily for a period of months.

Relative to the injection of joints, he mentions the substances used; viz., iodoform in oil or glycerine, phenol, iodine, and formaldehyde.

The operative treatment is generally used on adults, the object being to remove necrotic bone and bring about ankylosis.

Abscesses are preferably treated by aspiration.

In adults the wrist, hip, and spine should be treated conservatively, but the elbow, ankle, and shoulder should be resected.

JOHN H. SHAW.

# Jones, S. F.: Chronic Polyarthritis in Children. Colo. Med., 1914, xi, 411. By Surg., Gynec. & Obst.

Still described a form of chronic joint disease occurring in children, in which there was a progressive enlargement of the joints, and an accompanying enlargement of greater or moderate degree of the spleen and lymphatic glands. The onset is usually insidious, occurring before the period of second dentition, and commonly manifesting itself before the fifth year of life. Rarely the onset may be acute, with high fever and rigor. The enlargement of the joints is smooth and fusiform, quite characteristic. There seems to be no bony or cartilaginous enlargement and no crepitus. Pain if present is only on motion. There is marked limitation of motion with notable deformity. Joint involvement is progressive, the wrist, knees, and cervical spine being earliest affected. Suppuration or ankylosis does not occur.

The cervical and inguinal glands are enlarged, but are not tender and do not suppurate. Enlargement of the liver occurs in some cases, and anæmia is often present. Endocarditis is sometimes present. The temperature curve seems to be of two varieties. One shows periods of pyrexia, generally lasting only a few days, followed by a longer interval of apyrexia. The other type shows more or less con-

tinuous slight pyrexia.

Still's disease is progressive in type, but there may be periods of temporary improvement. Hopeless

crippledom may result.

The pathological changes show periarticular thickening, with practically no joint involvement. The changes in the glands are not characteristic. Some amyloid degeneration may be present.

Jones reports two typical cases of Still's disease occurring in his practice. Both cases showed marked improvement. In the second case the dried

extract of thymus gland was given in doses of five grains three times a day.

The conclusions are as follows:

r. Still's disease is probably not of tuberculous origin, and we are not warranted at the present time in assuming that the multiple joint involvement is due to the presence of tuberculous toxins, although such careful observers as Edsall, Lavenson, and Mouriquand are inclined to this theory; these cases of polyarthritis in children are very probably of an infectious character, closely resembling rheumatoid arthritis but differing in their morbid and clinical manifestations. The bacteriological findings are still obscure and need more careful and thorough laboratory research.

2. Glandular involvement is characteristic of the disease, but splenic and liver enlargements may

or may not be present.

3. The prognosis is more favorable than at first regarded by Still. Many cases, as the two above reported, have shown decided improvement, and in rare instances complete recovery has taken place.

4. Complete rest and immobilization of the affected joints is imperative during the acute and painful stage of the disease. Proper hygienic surroundings, fresh air, good and nutritious food, and the use of tonics, such as iron, arsenic, cod liver oil, maltine, etc., are essential.

5. The extract of thymus gland in suitable cases and in proper dosage seems to have a decided and

beneficial effect.

6. The resulting contractions and deformities require surgical interference, and they should be corrected and overcome during the quiescent stage.

Archer O'Reilly.

# Ridlon, J.: Hip Disease. Penn. M. J., 1914, xviii, By Surg., Gynec. & Obst.

The author emphasizes the importance of accurate study in the diagnosis of hip disease. He mentions the conditions which most frequently lead to error; viz., coxa vara, osteo-arthritis, hysterical hip, acute epiphysitis in infancy, tabetic hip, tuberculous sacro-iliac disease, Pott's disease, congenital dislocation, acute coccus, and other acute infections of the joint. In the treatment of hip disease Ridlon states that there is a time to remain in bed; a time to be up and around; a time to remove the weight of the patient from the diseased hip; a time for the limb to bear weight; a time to immobilize the joint; a time to permit a certain range of motion; a time to make traction on the limb, and a time when traction does harm. By far the most important principle of treatment is immobilization. The means commonly used to immobilize the hip-joint are briefly described. In the management of tuber-culous abscesses Ridlon emphasizes that they should not be incised; and further that all operations on tuberculous hips have been "conceived in ignorance and born in iniquity."

CHARLES M. JACOBS.

Allison, N., and Brooks, B.: Ankylosis: an Experimental Study. Surg., Gynec. & Obst., 1914, xix, 568. By Surg., Gynec. & Obst.

The nature of the process of bony ankylosis is studied in 23 experiments done on the knee-joints of dogs. The methods employed were: (1) Partial excisions, 9 experiments; (2) destruction of joint cartilage, 3 experiments; (3) injury to joint cartilage, 2 experiments; and (4) direct infections of joints,

9 experiments.

In the microscopic study of the material obtained from these experiments, the process of ankylosis is traced from its earliest to its complete stage. The reaction of the joint structures to injuries and infections is shown in the sections, and the duration of the process is indicated. The conclusions drawn throw some light upon the surgical treatment of ankylosis and incidentally the behavior of the bones after injuries and fractures within the joints.

Bowlby, A. A., and Rowland, S.: A Report on Gas Gangrene. Brit. M. J., 1914, ii, 913.

By Surg., Gynec. & Obst.

An interesting description is given of a very rapid gangrene following shattering wounds. The authors have isolated spore-bearing anaërobic organisms from the wounds and from the soil in the trenches. It is evidently very closely related to the organism of malignant ædema. The disease has no relation to so-called hospital gangrene.

#### F. C. KIDNER.

#### FRACTURES AND DISLOCATIONS

Groover, T. A.: Hints on the Diagnosis of Fractures. Internat. J. Surg., 1914, xxvii, 384. By Surg., Gynec. & Obst.

As Groover is a röntgenologist his contention that the older methods of diagnosis are of the utmost value is very interesting. He considers pain either spontaneous or elicited by pressure the most valuable single symptom and crepitus as possibly the least important, while deformity and swelling are valuable aids. He challenges the trite saying that "a sprain is worse than a fracture," and says that symptoms are more marked if the bone is involved than otherwise. The law of probabilities runs very true in these cases, more so than in other forms of surgery; that is, in shoulder injuries the surgical neck of the humerus is most frequently involved; in the wrist a Colles' fracture is commonest; in the hip fracture of the neck of the femur; in the foot a Pott's fracture. He discusses various fractures in the application of these rules and concludes that clinical examination is of greater importance than C. E. WELLS. X-ray plates in diagnosis.

Kauffer, H. J.: A New Method of Hastening Repair after Fracture.

N. Y. M. J., 1914, x, 1013.

By Surg., Gynec. & Obst.

Kauffer has originated a mixture of ground bone dust and petroleum, which is injected between and into fractured ends of bone to stimulate repair. Several injections may be necessary, the injections being made as deeply as possible and only between the fragments.

The paste must be sterilized for two hours, kept in a cool place, and when required, must be warmed thoroughly and shaken. A 4- to 8-ccm. syringe with long needle with a bore about gauge 20 should be used.

Examples are cited showing the rapid growth of bone wherever the paste was injected, while the controls showed no growth whatever.

JOHN H. SHAW.

Miller, S. R.: Treatment of Fractures of the Wrist. Internat. J. Surg., 1914, xxvii, 382. By Surg., Gynec. & Obst.

Miller believes that the X-ray is very frequently necessary to make a diagnosis of these fractures. He discusses Colle's fracture, laying particular stress on the value of the periosteum as a retention splint after reduction, and the frequency of fracture of the ulna styloid which demands treatment. He considers plaster of Paris the best splint for these cases, in the form of anterior and posterior splints moulded to form and retained in position by a starch bandage; with this form of splint the padding may be changed or its form altered to secure cleanliness or to counteract any tendency to malposition. In the early stage he uses massage and hot fomentations with active motions in about two weeks.

C. E. WELLS.

McCurdy, S. L.: The Treatment of Deformity Following Colles' Fracture. Internat. J. Surg., 1914, xxvii, 377. By Surg., Gynec. & Obst.

In a well illustrated article McCurdy outlines the technique for reduction of this fracture, which he tersely characterizes as the most frequent of all fractures and the easiest treated, and if not properly replaced at the time of the accident results in more bad deformities than all other fractures combined. Failure to secure good reduction results in (1) tension on joint ligaments, which is necessarily painful. (2) The tendons must work around a double curve, one point of which is at the point of fracture, and consequently poor function results. (3) Interference with venous return, causing swelling and stiffness of the hand. (4) Supination and forward displacement of the hand.

In reduction and retention of the fragments care must be taken to avoid pressure on the arteries and nerves. If, after two weeks, supination is interfered with, McCurdy operates and removes the impinging portions of bone.

C. E. Wells.

Palmer, E. P.: Bone-Transplantation as a Treatment of Fracture and Fracture-Dislocation of the Spine. Surg., Gynec. & Obst., 1914, xix, 664.

By Surg., Gynec. & Obst.

The author believes that bone-transplantation, which has won a place in the treatment of obstinate

fractures, should also be applicable to the treatment of fracture-dislocation of the spine. Fracture of the bony structure of the spine is a dangerous injury and should always call for immediate laminectomy in order to relieve pressure and to determine whether further operative measures are advisable. In the case reported, the twelfth dorsal and first lumbar vertebræ were fractured; immediate laminectomy was performed to relieve the dangerous pressure.

In considering the anatomical conditions and loss of function of this case and the usual line of treatment by prolonged confinement to bed with plaster-cast, jacket, or braces to secure immobilization and extension, and the discomfort incident to this method, Palmer decided that an internal splint by means of a strong bone-transplant after the method of Albee for Pott's disease would give an immediate immobilization support and extension to the injured spine which could be secured in no other way. He believed that if bony union were secured between the transplant and the spinous processes above and below the injury the spine would be given a firm supporting power almost up to the normal. If bony union failed to take place, the transplant would unite with the ligamentous structures of the spine, and, at least, furnish temporary immobilization and extension.

Three weeks after the laminectomy the spine was braced with a transplant, taking in two processes above and two below the injury. Perfect union resulted and the patient was kept in bed seven weeks, leaving the hospital twelve weeks after the accident, able to stand alone and walk with assistance.

The action of the spinal ligaments and muscles was not materially interfered with, so a good range of extension, flexion, and rotation of the spine was secured No external spinal support was used.

Hammond, W. N.: Recognition and Treatment of Fracture of the Femoral Neck. Hahneman. Month., 1914, xlix, 819. By Surg., Gynec. & Obst.

This fracture occurs most frequently in the aged, but it also occurs in the young and the middle aged. It is very frequently overlooked until too late. In an injury about the hip-joint, especially in the aged, it is advisable to consider it a fracture until the contrary is proved. Careful notes should be taken as to position and shortening. It is significant that the leg is nearly always everted, rarely inverted, and these positions cannot be voluntarily changed by the patient.

The rule of treatment is gentleness in manipulations, for if there is an impaction it must not be broken up. The patient should be placed in a suitable bed and the leg held in place by sandbags; a long splint is applied from the axilla to below the foot, or a plaster cast is used in suitable cases. The cast should be applied while steady traction is made and the leg abducted to about forty degrees.

It is in complete fractures that non-union occurs, although in a few cases it results from absorption of the neck in an impacted fracture.

The aged should not be kept in bed long, even if R. O. RITTER. the fracture has to be neglected.

Boulware, T. C.: Fracture of the Patella and Its Treatment. J. Mo. St. M. Ass., 1914, xi, 225. By Surg., Gynec. & Obst.

Inasmuch as the author believes it is not safe to make a compound fracture of a simple one, he obtains the best results in transverse fractures of the patella by the use of the subcutaneous silverwire suture through the tendon of the quadriceps

and the ligamentum patellæ, as follows:

After thorough antiseptic preparation of the limb and instruments, a five per cent solution of cocaine is injected into the skin at the four corners of the patella; then an incision or puncture is made deeply through the skin at each place where the cocaine was injected. By means of a long half-curved Hagedorn needle a strong silv r-wire suture is passed from one lower incision to the other through the ligamentum patellæ, then in again at the point of exit and upward along the edge of the patella and under the skin to the upper puncture on the same side, and the wire is drawn until it disappears at the lower incision. The needle is then introduced at the place of exit and passed transversely through the tendon of the quadriceps to the upper puncture on the opposite side; then the wire is drawn until it disappears at the upper puncture on the opposite side; the needle is again introduced at the place of exit at the upper puncture and passed by the side of the patella under the skin to the beginning point. The fragments are drawn together with tenaculums inserted above and below the suture. is then drawn tight and the ends of the wire twisted, cut off short, and tucked back under the skin and pressed up smartly against the wire by the side of the patella. A sterile dressing and a posterior splint are then applied. CHARLES M. JACOBS.

#### SURGERY OF THE BONES, JOINTS, ETC.

Levy, R.: The Filling of Bone Cavities with Pedicled Muscle-Flaps (Die Plombierung von Knochen-Beitr. z. höhlen durch gestielte Muskellappen). klin. Chir., 1914, xci, 666.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Levy recommends filling the bone cavities left after operation for osteomyelitic foci, with broad, tongue-shaped flaps of muscle. A focus at the lower end of the femur should usually be approached from the internal side, for the firm fascia lata prevents the sinking in of the soft parts. KIRSCHNER.

Payr: Further Experience in the Mobilization of Ankylosed Joints (Weitere Erfahrungen über Mobilisierung ankylosierter Gelenke). Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

By his method of fascia transplantation the author aims first to isolate the fragments of bone separated by chiseling or sawing, which otherwise might form free bodies in the joint, but the chief effect of the flap of fascia is on the effusion of blood that takes

place after the operation.

A short description is given of the variations in technique for the different joints. In the knee the patella, either at the time of the operation or preceding it, has a pad of fat placed underneath it. In the reconstruction of the extensor apparatus a peroneus tendon covered with fascia is used. Kirschner's incision has been rejected in favor of two lateral incisions. To avoid lateral motion a broad groove is chiseled for the patella and extensor tendon on the anterior surface of the condyles. In the hip-joint a Volkmann's chisel resection is performed, followed by implantation of fat and fascia, or an osteotomy is done and a saddle-joint created, which is capable of movement along two axes. In the elbow-joint the triceps and ulna are covered with fascia. In the finger-joints and the wrist-joint, Payr has recently been using fat.

The later fate of the new joints is studied by means of careful after-examinations. Neither arthritis deformans nor severe secondary deformities develop. The thick fibrous covering that develops over the joint-ends resembles the covering of a tendonsheath. The new-formed joint cavity is to be regarded as a mucous bursa, which develops in spite of extensive extirpation of the capsule. The bodies of the joints show no changes in size and form, though they are not, as Roux maintains they should be, covered with cartilage to keep them from wearing out. Their architectural structure is in perfect functional accord with the newly created mechanical conditions. Deep sensation and reflexes are perfectly maintained.

The indications are limited by the fact that Payr has had unfortunate results in mobilization after resection for tuberculosis. He describes 4 cases: one of ankylosis of the hip, 2 of arthroplasty of the knee, and one of new formation of an interphalangeal joint. In all the joints the motion was satisfactory. In the past two years he has performed 22 operations for mobilization of joints, including various kinds of joints, and has had 5 failures. The result in the old-

est knee case — 4 years — is excellent.

GÖBELL, of Kiel, has had satisfactory results in 4 cases of ankylosis of the elbow-joint by transplantation of fascia and covering the ends of the bone with the fascia.

Hohmeier and Magnus: Experiments in Surgery of the Knee-Joint (Experimentelles zur Kniegelenkchirurgie). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The authors undertook a great number of comparative experiments to determine under what circumstances mobilization of an ankylosed joint takes place. They removed the articular cartilages totally from the knee-joints of rabbits and in some cases they interposed muscle or fascia between the injured bone surfaces; in others there was no interposition of tissue. The surprising thing about the results of these experiments was that a movable joint resulted whether tissue was interposed or not. Anatomical studies are reported in detail which show that finally the ends of both bones were covered with fibrous connective tissue. Where muscle was interposed this consisted of muscle which had undergone fibrous degeneration, and if no tissue had been interposed it consisted of granulation tissue formed on both ends of the bone. The essential point in the formation of a new joint is not the interposition of tissue. but the maintenance of function, which is dependent on the presence of the extensor muscle apparatus and the lateral ligaments. KATZENSTEIN.

Tiegel, M.: Treatment of Phlegmons of the Hand (Über Behandlung von Handphlegmonen). Beitr. z. klin. Chir., 1914, xci, 435. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Tiegel treats phlegmons of the hand as follows: After sufficient incision of the wound edges he holds the wound open for 24 hours by means of a spring which he constructed. He does not use any other drainage or any tampons. The pus is carefully washed away with salt solution or a solution of 1:1000 bichloride of mercury, and the surface of the wound is then covered with loose gauze. He advises against the ordinary moist dressing, and lays emphasis on placing the inflamed part at rest, sufficiently if not absolutely. He advises that the splint be not placed on the palmar side, but on the dorsal side when the incision is in the palmar side, and that only the inflamed finger be placed at rest, the others left free. In order to apply this correctly he has had a simple wooden splint made, into which metal moulds for each finger can be screwed.

He does not advise the usual suspension or elevation of the hand, because he has found that it not only does no good, but that it rather favors the extension of the inflammation. He prefers the low position, taking care only that the wound does not lie against anything, as that would interfere with the

discharge of the pus.

Results from this method of treatment were excellent; an especially good feature was the absence of necrosis of the tendons. He attributes the slight degree of injury to the tendons, in spite of the free incision, to the fact that no tampons were used, the pus was discharged very freely from the wide open wounds, and the tendons were very quickly covered with fresh granulation tissue. Wound healing was extraordinarily rapid, and restoration of function surprisingly good. M. VON BRUNN.

Fischer, Aladar, and Baron, A.: Operative Treatment of Spastic Flat-Foot (Beitrag zur operativen Behandlung des spastischen Plattfusses). Zentralbl. f. Chir., 1914, xli, 755. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In spastic flat-foot that does not yield to conservative treatment the following operation, which has been tested clinically, is recommended. Through a lateral incision a piece of tendon 6 to 8 cm. long is excised from the peroneus longus, and a shorter piece from the peroneus brevis. In non-spastic flat-foot the excision is made only from the peroneus brevis. The wound is sutured. The scaphoid is laid bare by a small flap incision and bored through in the dorsoventral direction. The end of the piece of tendon from the peroneus longus is passed through the hole and united with the other end. A few strengthening sutures are passed through the piece of tendon, the periosteum, and ligament. The surface of the tibia is laid bare above the internal malleolus with a small longitudinal incision, and a small transverse canal is bored through it. The free end of the piece of tendon is carried by means of a silk suture and forceps into the upper wound, and fastened to the tibia under good tension with a silk suture carried through the hole in the tibia. Further fixation sutures are made through the periosteum and the end of the tendon.

It is necessary for the success of this treatment of flat-foot that the foot be brought into a position of marked supination, and that no decided changes have taken place in the bones of the arch of the foot. Sometimes a combination of this method with other operations is indicated.

WORTMANN.

#### ORTHOPEDICS IN GENERAL

Pim, A. A.: Epidemic Poliomyelitis. Brit. M. J., 1914, ii, 831. By Surg., Gynec. & Obst.

Pim discusses the types of the disease which he

observed during an epidemic.

He says that a number of children from one and one-half to sixteen years of age were suddenly stricken with high temperature, furred tongue, offensive breath, obstinate constipation, and pains in the back and limbs. In all these cases in which pain appeared early paralysis occurred in from one to seven days.

In other cases in which early pain was entirely absent, but the other symptoms present, after seven to ten days recovery apparently took place, but acute sciatica developed.

Other cases which had the early symptoms re-

covered without the after-results.

Pim states that the incubation period may be eight days, as two cases which left town at the beginning of the epidemic developed the disease after eight days.

The cases were widely scattered; in only two homes was there more than one child stricken.

The suggestion that flies and dust carry the disease is not borne out in these cases, as the children living in the poorest and most insanitary districts were not affected.

John H. Shaw.

# Packard, G. B.: The Treatment of Weak and Flat Feet. Colo. Med., 1914, xi, 406.

By Surg., Gynec. & Obst.

The literature on the subject of weak and flat feet shows the interest taken in the subject. The last report of one of the largest clinics in the country shows that 29 per cent of new cases were of this nature, while in 1890 there were less than 3 per cent in the same clinic. This condition is the cause of marked disability, not only in the feet but also in other parts of the body. Evidences of weakened feet, such as indefinite pains and disability, are usually present even before flattening appears. In this stage motions are restricted, especially adduction of the forefoot. The deformity is characterized by a depression of the arch and by lateral displacement caused by persistent abduction of the foot.

The body weight normally passes through the center of the knee- and ankle-joints and over the dorsum of the foot to the second toe. In flat-foot the weight passes to the inner side of the foot and causes strain of the astragaloscaphoid joint. This abnormal abducted position of the foot is increased by faulty footgear, occupation, increase in weight, genuvalgum, and debilitated states. High heels tend to throw the weight on the front of the foot and tend to interfere with the function of the anterior arch. Hallus valgus, by preventing adduction of the great toe, tends to weaken the support of the long arch. The patient tends to stand and walk with abducted feet, the amount of deformity depending upon the muscular weakness. In the more severe cases muscle spasm is present, and, later, adhesions and bone changes may result. Pain may be absent, but as a rule is present when the feet are in use. It may be in the heel or in the knees, hips, or lumbar region.

The treatment will depend upon the stage or degree of disability. The aim is to make the passive motion possible without pain, spasm, or deformity, and to strengthen the muscles, thus restoring function and overcoming deformity and obstruction. Arch supports will not fill these requirements and are often injurious, as they tend to weaken the muscles.

In milder cases the shoes may be modified, the heels and inner sides may be raised, thus throwing the body weight to the outside. In the more severe types where spasm has developed the foot must be put at rest. This may be done by adhesive strapping in the less severe cases. In the most severe cases, the foot must be corrected under an anæsthetic and put in a plaster of Paris cast, which should be worn until the pain and tenderness have disappeared. In cases which resist this treatment and in relapsing cases an arthrodesis of the astragaloscaphoid joint may be performed. In those cases in which the tendo achillis is short, it may be advisable to lengthen it.

The correct shoe for a normal foot should correspond to the shape of the foot. The inner side should be straight, and there should be plenty of room on this side, as the thickest part of the front of the foot is on the inner side. The width of the forward part should correspond to the weight-bearing position of the foot at that part. There

should be no dorsal flexion in the sole of the front of the shoe. This portion should also be flat from side to side. The heel should be low and broad.

It is often necessary to make the change to improved footgear gradually, as a sudden change often causes considerable discomfort. Each case must be studied carefully and treated accordingly. The general condition of the patient must be considered, and any other pathological changes should be treated.

Artificial supports should be dispensed with as soon as possible, or at least reduced to a minimum degree, in order to reëstablish the normal functions of the foot. ARCHER O'REILLY.

# SURGERY OF THE SPINAL COLUMN AND CORD

Griffith, J. D.: Report of Three Cases of Partial Luxation of the Atlas on the Axis. Am. J. Orth. Surg., 1914, xii, 332. By Surg., Gynec. & Obst.

The author reports three interesting cases of unilateral dislocation of the atlas on the axis without fracture of the odontoid process or any portion of either bone; in each instance recovery followed

The patients complained of pain when attempting to move the head, radiating over the occiput and down the neck, the head and chin deviated to one side, the neck muscles were rigid, and there was a prominence back of the angle of the jaw on the side affected.

An X-ray picture taken anteroposterior with the mouth open is a very important procedure in corroborating the diagnosis and in determining any fracture of the odontoid process.

These luxations are usually unilateral and consist of a rotary displacement in the upper vertebræ on the side of the lesion, slipping forward and catching either on the apex of the articular process or slipping over into the intervetebral notch. Compression of the cord is unusual. Reduction is possible by proper manipulation even after the lapse of a long interval. ROBERT B. COFIELD.

Scott, O. F.: Hyperflexion of the Spine with Multiple Spinous Process Fractures Without Accompanying Lesions. Chicago M. Recorder, By Surg., Gynec. & Obst. 1914, xxxvi, 600.

The author summarizes his statistical report of these fractures, showing that spinal fractures occur in about one per cent of all general fracture cases and that but 4 of each 1,000 spinal fractures are spinous process fractures. Two in every 1,000 spinal fractures occur in the dorsal region and onehalf of one per cent occur in the lumbar region.

The etiology is a deduction from medical literature and personal observation and comprises:

1. (a) Direct causes, with trauma applied directly at any angle without hyperflexion; (b) voluntary muscular action with violent hyperflexion.

2. Indirect causes with trauma applied laterally without hyperflexion, there being fixation of one

extremity and mobility of the other and trauma applied at any angle, but fracture occurring from an accompanying hyperflexion. A hyperflexion beyond the physiological limit is the greatest etiological factor if direct trauma is eliminated.

The thoracicocervico and the thoracicolumbar regions are the most common regions involved in fracture of the spine, as here we have the unions of two flexible and rigid areas. A case is cited having a fracture of the fourth, fifth, sixth, and seventh dorsal spines caused by direct trauma under forcible hyperflexion, there being no accompanying lesions other than the fracture of the spinous processes.

H. W. MALTBY.

Jones, S. F.: The Pathological Report of a Case of Vertebral Osteoarthropathy—Charcot's Osteoarthropathy-Charcot's Disease of the Spine. Am. J. Orth. Surg., 1914, By Surg., Gynec. & Obst. xii, 303.

A very interesting and instructive report of this rather rare condition is given, together with a photomicrograph and an X-ray plate. The subject, a male, aged 50, had been under observation for several years. He presented kyphosis of the second, third. and fourth lumbar vertebræ, without pain on motion of the spine, muscular spasm, or psoas contraction. There was some diminution of the kyphosis upon hyperextension. The Wassermann test was positive, and the neurological examination established a diagnosis of locomotor ataxia. There was compression of the second, third, and fourth vertebræ, the convexity of the scoliosis being to the left with some resulting absorption of the bodies and a hypertrophic bony development. He gradually became helpless and was finally confined to bed for two years and ten months, a decubitus developing over the sacrum. The case was complicated by an irreducible right inguinal hernia. A necropsy report by Whitman, together with photomicrographs, showed hypertrophic bony changes in the lumbar vertebræ with thickening of the spinous processes and ankylosis of the first, second, and third lumbar segments. Microscopically, a tumor of the omentum showed small spindle-celled fibrosarcoma.

H. W. MEYERDING.

# SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Durel, W. J.: A Case of Extensive Lupus Treated with Tubercle Bacilli Emulsion. N. Orl. M. & S. J., 1914, lxvii, 342. By Surg., Gynec. & Obst.

The author's case was one of extensive lupus accompanied by cervical adenitis. Both conditions had resisted surgical treatment; but the author brought about a cure by means of injections of tubercle bacilli emulsion. The complete cure required one and a half years. The dosage of the emulsion was determined by the patient's neutrophile index. Delayed healing of the ulcer, it is claimed, was due to too large dosage and too frequent administration.

MAURICE J. GELPI.

Rehn, E., and Miyauchi: Transplantation of Cutaneous and Subcutaneous Connective Tissue (Das cutane und subcutane Bindegewebe in veränderter Funktion). Arch. f. klin. Chir., 1914, cv, 1. By Surg., Gynec. & Obst.

Rehn found that in the transplantation of tendons and fascia the connective tissue transplanted with them played a most important part in their maintenance and regeneration. Wherever connective tissue in the body is subjected to long continued or frequently repeated traction, it finally forms a fibrous band resembling a tendon. When a tendon is transplanted it undergoes transformation into connective tissue before taking up function in its new location; hence it occurred to Rehn that it would be simpler and therefore better to transplant connective tissue directly rather than to use a tendon which must ultimately be changed to connective tissue. Moreover, tendons must be transplanted from the same individual in order to take

satisfactorily, while connective tissue can be transplanted from other individuals quite as well.

A detailed description is given of a series of experiments which Rehn and Miyauchi performed on dogs. After the skin was shaved and disinfected a flap of epidermis and the greater part of the cutis was laid back, and then from underneath it was taken a strip of subcutaneous connective tissue. including the thin layer of cutis that had been left and a layer of fatty tissue underneath that varied in thickness depending on the adiposity of the animal. In the first experiments the strip of connective tissue was merely twisted so as to form a string, but later it was twisted around a silk thread or a braid of two strips of tissue and a silk thread was made. The Achilles tendon was then resected from the os calcis to the muscles and the strips sutured under tension in place of it. The subcutaneous tissue was then sutured over it to avoid forming a dead space and the skin wound closed. The leg was fixed with a papier-mâché dressing in slight tension. On the third day it was renewed in such a fashion that slight movement was possible, and on the eighth day all dressings were removed. The functional results were excellent and histological examinations made at varying periods after the operations showed tissue resembling normal tendons. The connective tissue takes without any inflammatory reaction.

Three cases are described in which the method was used clinically: once to replace a tendon, once to replace a joint ligament, and once to occlude the pylorus in duodenal ulcer. Its best field is in the replacement of tendons and ligaments. A. Goss.

# **MISCELLANEOUS**

## SERA, VACCINES, AND FERMENTS

Nieszytka, L.: Results of the Abderhalden Method in Psychiatry (Ergebnisse der Abderhalden-Methoden für die Psychiatrie). Ztschr. f. d. ges. Neurol. u. Psychiat., 1914, xxvi, 546.

By Surg., Gynec. & Obst. At a meeting of psychiatrists at Lauenburg, omerania, June, 1914, Nieszytka of Tapiau gave

Pomerania, June, 1914, Nieszytka of Tapiau gave the fullest abstract of the results of the clinical use of this reaction which has appeared. In his presentation he did not confine himself to the psychiatric literature, but entered into the controversy on the basis of the reaction. He especially considered the work of Stephan, and attempted to unify upon the basis of the Abderhalden theory the criticisms of the chemists and the serologists. He makes clear upon the basis of blood contamination the trypsin reactions which have overthrown in the minds of some the theory of albumin specificity.

In bringing together the clinical work of 12 psychiatrists besides his own work he gives the results of the examination of 635 cases of dementia præcox, 82.4 per cent of whom gave the reaction to the sex glands, 38.2 per cent to the thyroid, and 7.9 per cent to cerebral cortex. Besides these there were scattering reactions running as high as 33 per cent of some investigators' cases.

He combines the work of 12 syphilologists in their examination of the sera and cerebrospinal fluid from progressive paralysis, in whom 80 per cent gave reactions to brain substance, 30 per cent to sexual glands, 28 per cent to the thyroid gland, 47 per cent to the spinal cord, 51.5 per cent to the liver, 45 per cent to the kidney, besides other scat-

tering reactions.

It appears very clear that in general paresis the reactions begin in the cerebellum and advance to different parts of the brain until all its parts are involved. About the time the cerebral cortex be-

comes involved reactions appear in the abdominal viscera and go on until all the organs of the body show reactions.

In epilepsy, the reactions are consistently pathognomonic: more than 90 per cent give reactions to cerebral cortex and only a very small per cent to other organs of the body.

Nieszytka also notices without much comment the unfavorable clinical work of Lange, Michaelis, and Otto.

A. Goss.

Parsamow, O. S.: Experimental Study of the Origin and Specificity of Blood Ferments in the Use of Abderhalden's Dialysis (Einige experimentelle Untersuchungen über die Frage der Entstehung und Spezifität der Blutfermente bei Anwendung des Abderhaldenschen Dialysierverfahrens). Biochem. Ztschr., 1914, lxvi, 269. By Surg., Gynec. & Obst.

Parsamow presents some experimental investigations upon the specificity of the defensive ferments as shown by the Abderhalden reaction. He has used rabbits alone in his investigations, the results of which were first published in an inaccessible Russian thesis. His methods were rather massive in undertaking to fill the system with the albumin molecules of different organs.

With the utmost antiseptic precautions he ligated off one or more of the organs, such as the kidney in one case, the spleen in another, the testicle in another, and the liver in another, and proved by delay that the animals were viable. He also attempted to fill the circulation with foreign albumins by preparing an emulsion, blood free, of different parts of the body of the rabbit, and injecting subcutaneously, intraperitoneally, or intrapleurally from a few drops to a cubic centimeter or more of these emulsions. He expected in both cases that a defensive ferment would be aroused against the organ cut off from the circulation or the organ used in the preparation of the emulsion. The results are tabulated in a series of three tables.

For example, he ligated off completely the testicle of a rabbit. At the end of the first day there was no ferment found in the rabbit's blood. At the end of the seventh day there was a doubtful reaction to the testicle; at the end of the fifteenth day two ferments were found in the blood serum; one katabolized the testicle, and one the fundament made from muscle of rabbit. At the end of the twenty-fourth day there were three ferments: a very positive ferment against the rabbit's testicle and a ferment against rabbit's muscle and also one against liver albumin. In the following 17 experiments of a somewhat similar nature, more than one ferment was found after the ligation of the adrenal, the liver, the kidney, the thyroid, the ovary, the salivary glands, the striped muscle, and the spleen; but in every case the ferment against the organ ligated off was the most pronounced and remained longest in the blood, lasting in most cases for two or three weeks.

In the case where an emulsion of an organ was used the specificity was the most pronounced,

isolated, and protracted. When testicle, ovary, liver, and spleen emulsions were used, the ferment against the corresponding albumin was found at the end of the second hour. At the end of the second day the reaction was most pronounced, and was represented by double plus. By the end of the fifth or sixth day the ferment had disappeared. Parsamow was able, however, to bring about reactions by the injection of trypsinogen, and by the use of two grams of trypsinogen by mouth, which were similar to those produced by ferments against various albumins. For example, two hours after a rabbit had been fed two grams of trypsinogen, the serum of that rabbit's blood, placed in a dialyzer on muscle, kidney, spleen, liver, testicle, adrenal, and ovarian fundaments, gave a very positive ninhydrin re-action to muscle, spleen, liver, and adrenal; these reactions faded away somewhat at the end of the first day and completely by the end of the third day. Even with smaller doses of trypsingen reactions were brought about which would be confusing.

Parsamow does not attempt to explain these manifestations but does conclude that the researches to be made depending upon the specificity of the ferments must be guarded by a due consideration of the possibility of bringing about similar and confusing reactions by the use of substances of this kind.

A. Goss.

### BLOOD AND LYMPH VESSELS

Buerger, L.: Is Thrombo-Angiitis Obliterans an Infectious Disease? Surg., Gynec. & Obst., 1914, xix, 582. By Surg., Gynec. & Obst.

Buerger previously demonstrated that so-called presenile gangrene, or endarteritis obliterans, is really a thrombotic and inflammatory process involving the arteries and veins, and, therefore, properly designated as thrombo-angiitis obliterans. In a study of 19 amputated limbs the old or healed stage of the disease—that in which the vessel lumen is filled with vascularized, canalized connective tissue—was most commonly found. In two instances, however, the early or "acute" stage of the disease was represented. In this there is an inflammatory infiltration of the wall of the vessel, with occlusion by red clot, and there are certain characteristic foci containing giant-cells.

More recent studies bringing the total number of amputated lower extremities to 40, together with 2 forearms, tend to throw light on the nature of the etiologic factor. The association of migrating phlebitis of the subcutaneous veins of the upper and lower extremities—reported by Buerger in 1911, and now noted in 25 cases—brought up the question as to whether these veins were affected by the same disease. And, in truth, it was found that the "acute" lesion in the deep arteries and veins was identical with the lesion characteristic of the migrating phlebitis. The study of the various stages of the disease was thus made easy in that the subcutaneous veins could be used for that purpose,

and extirpated with impunity under local anæsthesia. Twenty-five different exsected specimens from 18 cases were collected. In these it was shown that certain purulent foci are the precursors of the giant-cell foci, and represent the earliest stage in the acute lesion; that these foci are recognizable in the obturating clot; that they lead to the formation of the typical miliary giant-cell foci, characteristic of this disease alone, and suggest that the process is brought about by some infectious organism, although the ordinary methods of research have failed to disclose any such organism. Future studies must be directed to the discovery of the microbial agent in the thrombosed superficial veins.

Peet, M. M.: Indications for and Variations in the Technique of Eck's Fistula. Ann. Surg., Phila., By Surg., Gynec. & Obst. 1914, lx, 601.

This operation has been twice performed on man, once by Vidal in France and once by Rosenstein in Leipzig. Experimental work on animals has proved its feasibility and that if done early it is free from danger.

The operation is indicated in cirrhosis of the liver with ascites, particularly in alcoholic cirrhosis where other organs are not seriously affected and also in those cases where compensatory circu-

lation exists.

In cirrhosis due to stasis in the hepatic vein, socalled nutmeg liver, even when associated with ascites, Eck's fistula could not be expected to give relief, as the trouble is not in the portal vein but is due to the increased pressure in the vena cava itself. Neither would the fistula be of benefit in ascites due to cardiac disease nor in nephritis. In Banti's disease when accompanied with cirrhosis, relief should be obtained by the operation, also in cases of thrombophlebitis of the portal vein.

He adopted a modification of the technique of Carrel and Guthrie, in that he used a three-bladed forceps, resembling those used in doing a gastroenterostomy, except that they were very much smaller. He also advises the use of a curved needle.

If, on account of adhesions, access to these bloodvessels is not feasible, or if there is disease of the portal vein, it will be possible to make the anastomosis between a mesenteric vessel and the common iliac vein. D. L. DESPARD.

#### ELECTROLOGY

Cole, L. G.: Preliminary Report on the Therapeutic Possibilities of the Coolidge Tube. Med. Rev. Revs., 1914, xx, 567. By Surg., Gynec. & Obst.

One of the greatest handicaps in röntgen therapy has been the inability to secure rays of great penetrability in sufficient quantity to have an appreciable effect upon deep-seated structures. The reason for this is the instability of the vacuum in the ordinary X-ray tube. The Coolidge tube produces rays of extreme penetration continuously over long periods, in large quantities, and without fluctuation. An erythema of the skin can be produced with this tube in 30 seconds.

The author conducted comparative experiments with ordinary X-ray tubes and with a Coolidge tube in an effort to produce an erythema dose 3 inches below the surface under radiation. A piece of meat 6 inches thick was used for the experiments. The author judges that the conditions of the experiment were comparable to those of the röntgen treatment of a cancer of the pylorus. With an ordinary tube it was necessary to use 7 tubes one after the other, all operated at their full capacity, the entire length of exposure being 11.5 minutes, to produce an erythema dose 3 inches below the surface. No filter was used and the surface received 16 times an erythema dose. Under actual working conditions 16 portals of entry would have been necessary or the patient would have been seriously burned, or if an erythema dose only were given on the skin the part under treatment would receive only onesixteenth of a dose. A dose of this size might be not only useless but actually stimulating.

With a Coolidge tube operating under similar conditions, with the exception of a filter of aluminum 3 mm. thick interposed, an erythema dose was produced 3 inches below the surface in 6 minutes, 10 milliamperes going through the tube. surface received 6 times an erythema dose; therefore 6 portals of entry were necessary in this experiment. With an aluminum filter 10 mm. thick 14 minutes were required for a full dose 3 inches below the surface, the other conditions being the same. In all the experiments the target of the tube was 6 inches from the surface under radiation.

Two significant facts are emphasized by these experiments: (1) Necessity of filtration. With a 3 mm. aluminum filter one-sixth of a dose can be given 3 inches below the surface; without a filter only one-sixteenth of a dose; (2) necessity of numerous portals of entry, as the dose given can be directly multiplied by the number of ports available. G. W. GRIER.

Morton, W. J.: Embedded Radium Tubes in the Treatment of Cancer. Med. Rec., 1914, lxxxvi, By Surg., Gynec. & Obst.

Morton reports a case in a young woman of osteosarcoma of the humerus, in which radium was embedded and recovery followed. Eight years have now passed without recurrence. The author feels that this form of practice will come more and more into use. Carcinoma of the breast was treated with the same brilliant result. W. S. NEWCOMET.

Ranzi, Schüller, and Sparmann: Experience in Radium Treatment of Malignant Tumors (Erfahrungen über Radiumbehandlung malignen Tumoren). Strahlentherap., 1914, iv, 97. By Surg., Gynec. & Obst.

These authors had all together 225 mg. radium and 150 mg. mesothorium. They filtered at first with lead, later with metals that produced only slight secondary rays (1.5 to 2 mm. thick). To exclude secondary rays non-metallic covers were placed over these. Different dosages were used in different cases, but sometimes very large individual doses as well as large total doses were used. Among 29 cases of tumors, 6 died. In three cases—recurrent carcinoma of the tongue, basal-cell cancer of the alæ of the nose, and a tongue cancer as large as a hazelnut—the tumors disappeared; 9 were not affected, they did not even grow worse. In 11 cases the tumor grew smaller, and among these were sarcomata and carcinomata; for example, cancer of the cesophagus producing stricture.

In these experiments it could not be seen that there was any truly elective effect on tumor tissue; the normal surrounding tissue was also injured, giving rise to the possibility of perforation and hæmorrhage; they encountered the latter in five cases. The analgesic effect of the rays is by no means constant. On the whole, the authors believe that radium should be used only after operation and as a palliative measure in inoperable tumors; the malignancy of such tumors may be decreased by its use; but all operable tumors should be operated upon unconditionally.

A. Goss.

### MILITARY SURGERY

Cumston, C. G.: Gunshot and Bayonet Wounds of the Stomach. Med. Press & Circ., 1914, cxlix, 472. By Surg., Gynec. & Obst.

Bayonet wounds are very similar to stab wounds and the treatment suggested by the author is mainly conservative.

Gunshot wounds of the stomach vary in degree, depending upon the type of projectile and the distance from which it was fired. Fired from a distance exceeding 300 meters, simple perforations which are small and circular result. The borders of the wound may close together producing an almost complete occlusion. When the firing distance is less than 300 meters the result varies according to the state of plenitude of the stomach. When the organ is empty the wounds present the same characteristics as those just enumerated. But when the stomach is full genuine bursting of the viscus results.

The treatment of gunshot wounds of the stomach according to the author should be mainly conservative. In the South African war and in the Russian-Japanese war, statistics seem to indicate that of those operated upon, a larger percentage died than of those treated conservatively. Conservative treatment consists in absolute rest under morphine and opium and nothing by mouth for three to four days or even longer. The only primary indication for operating is the presence of intra-abdominal hæmorrhage. Peritonitis is the only late indication for operating, and in these cases the operative act should be reduced to the minimum.

J. H. SKILES.

Mummery, P. L.: Injuries to the Bowel from Shell and Bullet Wounds. Brit. M. J., 1914, ii, 914. By Surg., Gynec. & Obst.

In his position as surgeon to King Edward VII's hospital for officers, the author has in the last three months seen several cases of injuries to the bowels from shell and bullet wounds. Injuries to the rectum and pelvic colon in these cases are serious and attended by a higher mortality than similar injuries to other parts of the alimentary canal. There can be no doubt that a high velocity Mauser bullet may pass through the abdomen or across the pelvis penetrating the large and small bowel, without causing fatal or even very serious results. always provided that certain conditions be present. Of these conditions the chief are: (1) the bullet must be traveling at a relatively high velocity; (2) the intestines must be more or less empty of fluid contents; (3) and the proper first-aid treatment must be administered. The bowels should be given a complete rest for forty-eight hours after the injury by withholding all food, giving morphine in full doses, and providing as much rest as possible.

Mummery ascribes the good results obtained in the treatment of the wounded in the present war to the efficient first-aid service. Wounds involving the large bowel are generally complicated by other injuries, such as fracture of the pelvis, injury to the bladder, or damage to the large nerve-trunks, more commonly as concussions than as cuts. The most difficult cases are those associated with fracture of the pelvis and a septic wound. Healing in such cases is slow, as portions of bone must separate before healing can take place. The most serious cases are those in which a shell wound is complicated by a fæcal fistula and fracture of the pelvis.

In these severe cases of wounds complicated by a fæcal fistula, Mummery believes the best thing to do is to perform a temporary transverse colotomy, at the same time opening up the wound thoroughly and providing free drainage. After the wound in the bowel has healed, the colotomy can be corrected by a secondary operation. The best way to perform a colotomy in these cases is by means of a glass rod placed under the bowel. No attempt at performing colotomy is necessary in the case of a small wound not complicated by a fractured bone, even though fæcal leakage be present, provided the patient has not developed a serious degree of sepsis. If such an attempt has been made the rectum should be drained by means of a tube introduced through the anus. Wounds involving the bowels should not be treated by immediate operation even if proper surgical facilities are available. Complete rest, absence of food, and the administration of morphine constitute the proper treatment; surgical treatment should be reserved for treatment of secondary complications.

Three cases of bowel injury due to bullet or shell injuries are reported from the author's experience.

E. C. Robitshek.

Laurent: Fractures of the Long Bones and Joint Injuries in the Balkan War (Les fractures des os des membres et les blessures articulaires dans la guerre balkanique). J. de chir., 1914, xiii, 9.

By Surg., Gynec. & Obst.

In 100 cases there are 80 injuries of the soft parts and 20 fractures. The effect produced may be shock, with fragmentation or fracture, perforation by direct pressure, or explosion from lateral pressure. The degree of destruction varies with the distance from which the shot is fired; it is said that comminution is possible at a distance as great as 2,000 meters. The destruction is greater if the projectile is oblique than if it is transverse. The complications of fracture are hæmorrhage, shock, infiltration, phlegmon, osteomyelitis, gangrene, septicæmia, pyæmia, arthritis, tetanus, amyloid degeneration, tuberculosis, exuberant callus, ankylo-

Fracture from shrapnel shows the greatest tendency to infection, because the wounds from this form of projectile are larger, the fragments are more apt to lodge in the wound, the orifices are larger, and there is more hæmorrhagic effusion, which is an important factor in suppuration. The consolidation of simple transverse or oblique fractures occurs in the same time as in civil practice; sometimes even sooner because practically all of the soldiers are young and robust and bone repair is

very vigorous.

sis, and pseudarthrosis.

Treatment of fractures is conservative in the majority of cases and consists essentially in immobilizing the limb and preventing or limiting infection. Suture is very rarely indicated in military surgery; the suture may become infected by passing through a latent focus of infection and become so

serious as to call for amputation.

Simple fractures are reduced, preferably under anæsthesia in fractures of the femur, and fixed with splints or plaster. Extension should be applied in fractures of the femur, humerus, and forearm. The plaster cast is valuable in transportation, but it may take too much time to apply it at the front, and it may conduce to displacement of the fragments if the limb is swollen when it is applied and later resumes its normal size. It requires great care in watching and is difficult to keep clean. Some surgeons apply splints at first and wait for the reduction of swelling to apply plaster. Examination for and extraction of fragments should generally be avoided. The author thinks a method similar to Hackenbruch's screws would be valuable in military surgery. In infection there should be incision of the exit wound, possibly disinfection with hydrogen peroxide or tincture of iodine, and drainage. incision may be sufficient without removal of fragments. Drainage should be established, but tamponing has been the source of many infections from retention of exudate.

It should be borne in mind that in fractures there may be a fever from fatigue that disappears with rest and reduction. In infiltration or fever wet

compresses should first be tried, and the greatest effort made to select the best time for incision. The typical primary resection of civil practice is not indicated in military surgery. However, if removal of fragments would leave too large an infected cavity, especially in the thigh, amputation would better be performed at once. If necessary arteries may be ligated and nerves sutured. Late resection consists in correcting vicious callus and removing sequestra. Amputation is practiced in about two per cent of the cases and is indicated in extreme trauma, excessive destruction of soft parts with section of the principal artery and its nerves when collateral circulation is not established, very extensive comminution, progressive phlegmon, and severe osteomyelitis. Fractures of the femur should be carefully watched so that amputation will not be delayed too long. Secondary amputation, especially, is performed under the above-mentioned conditions. Primary amputation is practiced after the disappearance of shock in cases of extreme de-

struction and very extensive fracture.

There may be non-penetrating periarticular injuries or the bullet may lodge in the epiphyses or more rarely in the joint. A prolonged fever must be regarded with suspicion, even if it is moderate in degree, for it may indicate a serious change in the joint. A fracture of the diaphysis of the femur or humerus may have fissures extending to the joint causing a hæmarthrosis. Treatment is conservative in the majority of cases, consisting in dressing with tincture of iodine, immobilization with extension, and in some cases counterextension. In abscess the treatment consists in incision and removal of free fragments, sequestra, and foreign bodies. Ordinarily, fragments should not be removed for some time. Primary extirpation is generally contra-indicated; it is indicated only in some cases of comminution by shrapnel or shells. Primary amputation also is indicated only in cases of extreme destruction of soft parts or bones, especially in destruction of arteries or nerves when there is no hope of sufficient collateral circulation, and particularly in injuries from bursting shells. Secondary amputation is indicated in septic osteomyeloarthritis, gangrene, and intense atrophy; if amputation is delayed until the marasmic period of the infection, the patient seldom survives.

Fractures of the head of the humerus may be simply perforating, fissured, or comminuted. Treatment consists in immobilization. Resection or disarticulation may be rarely indicated.

Fractures of the diaphysis of the humerus constitute about one-fifth of the fractures of long bones. Complications and treatment are the same as given

above under fractures in general.

In fractures of the elbow simple perforation is rare. A transverse shot is more injurious than an anteroposterior one. Dislocation of a fragment with injury of the nerves is frequent. Treatment frequently ends in ankylosis of the joint, which necessitates long and careful physical treatment or typical

resection. Secondary resection may be indicated in stubborn osteo-arthritis or in ankylosis. Total resection is apt to give a better result than partial resection.

Besides simple injuries of the forearm, there may be in rare cases section of the tendon; suture is indicated; frequent complications are lymphangitis and thrombophlebitis, in which free incision and elevation of the arm is indicated, followed by mobilization of the fingers as soon as the infection has subsided. Simultaneous injury of the radial, ulnar, and interosseous arteries may be followed by

gangrene

In injuries of the wrist-joint there may be simple perforation of the capsule, cylindrical perforation of the epiphyses of the radius and ulna, with or without fissures, or fracture of one of the styloid processes. The base of the metacarpals may be injured, and these wounds are large and irregular with tearing of the tendons. Conservative treatment is especially indicated here; caution should be exercised even in the removal of fragments. The hand should be placed in slight dorsal flexion, the most favorable position for ankylosis. Amputa-

tion is very rare.

Fracture of the coxofemoral joint is very grave and often fatal if the acetabulum is injured, favoring pelvic infection. The fracture may be intra- or extracapsular. The pain is extreme, the danger great, and the greatest care is necessary. If there is no infection, expectant conservative treatment is applied, the joint being perfectly immobilized in a plaster cast including the pelvis. Early transportation should be avoided if possible. In infection free incision should be made with counteropening and the extraction of free fragments and sequestra. Secondary resection and sometimes disarticulation is indicated in necrosis, stubborn infection, and extensive fistulæ. Primary disarticulation for shock or hæmorrhage is fatal in more than half of the cases. Reamputation, or rather disarticulation, after amputation of the thigh is fatal in 60 per cent of the cases.

Fractures of the femur constitute about one-

fourth of the fractures of long bones. The mortality is 14 to 17 per cent. Most of the fractures are comminuted, and the author has seen cases where there were as many as 6 or 8 orifices in shrapnel wounds. The projectiles are generally lodged in the wound and suppuration is the rule. Conservative treatment is best in the majority of cases. The mortality in amputation is 50 per cent.

In injuries of the knee, immobilization is the best treatment, especially with plaster. Puncture should be performed if the effusion is too profuse, and arthrotomy with free drainage in case of suppura-

tion

In fractures of the bones of the leg there is suppuration in 8 out of 10 cases. The fracture should be reduced and immobilized in plaster, followed by extension in the hospital with the limb raised; fragments should not be removed too soon.

Injuries of the foot are frequently caused by ricocheting bullets, and consequently are often infected by fragments of the stockings; four out of five of them are complicated by fracture. The toes frequently have to be amputated, sometimes the entire foot.

A. Goss.

Lemon, F.: X-Rays in War. Arch. Röntg. Ray, 1914, xix, 200. By Surg., Gynec. & Obst.

Lemon has planned a self-contained auto-van röntgen apparatus for field work. The 35-h.p. engine serves either to run the van or a 150-volt dynamo.

Besides a dark-room and storage for the equipment, the van carries two 12-inch coil outfits, one with Wehnelt and one with mercury break. These communicate through side doors with two tents 8x12 feet, which, when not in use, roll up under the eaves of the van. One side is designed for röntgenography and the other for fluoroscopy. The van also carries two 100-gallon tanks, one for petrol and one for water.

Transportation is provided for a corps of twelve—two X-ray surgeons, two assistants, one electrical engineer, one mechanic, two photographers, four ambulance men.

DAVID R. BOWEN.

# GYNECOLOGY

### UTERUS

Tawildaroff, F. N.: Involvement of the Vagina in Carcinoma of the Cervix (Die Affektion der Vagina bei Portiocarcinom). Verhandl. d. l. russ. Krebskong., St. Petersb., 1914.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Based on a thorough examination of his 62 cases the author comes to the conclusion that in cases of cancer of the cervix, subepithelial foci can quite frequently be found, especially in the posterior wall of the vagina, even when the vagina appears macroscopically to be completely normal. Such findings are particularly frequent in adenocarcinoma of the cervix; therefore the author advises that in the operation for carcinoma of the cervix the posterior wall of the vagina should always be removed.

Kriwski, L. A.: The Operative Treatment of Carcinoma of the Cervix (Die operative Behandlung des Portiocarcinoms). Verhandl. d. l. russ. Krebskong., St. Petersb., 1914.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author always operates by laparotomy, as this is the only way in which he can get a satisfactory view of the extent of the diseased area. He reports 736 cases, of which 109, 18.4 per cent, could be operated on. The duration of the disease varied from one month to two years; the mortality was 13 per cent. The patients were discharged on an average after 29 days. In 6.3 per cent of the cases glandular metastases could be demonstrated. In 27 cases there was recurrence; 11 of the patients were normal after 3 years. Nothing further has been heard of 56 of the cases operated on. The number of permanent recoveries cannot yet be determined.

Dobbert, F. A.: Immediate Results of Radium Treatment of Cancer of the Uterus (Unmittelbare Erfolge der Radiumtherapie bei Uteruskrebs). Verhandl. d. l. russ. Krebskong., St. Petersb., 1914. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author found marked improvement of the subjective condition after the use of radium, but many times there were complications, such as local pain, fever, etc. Radium was used in 15 cases with inoperable carcinoma of the uterus: in 8 cases there was improvement, in 3 no change, and 4 grew worse. The treatment is not yet ended in any of the cases, although radium has been used for three or four months. The microscope showed that the cancer tissue had disappeared and had been replaced by granulation tissue, which contained products of disintegration of cancer-cells. Radium

can be used in the treatment of cancer in the beginning stages and in inoperable cases.

VON HOLST.

Kossogljadoff, W. M.: The Immediate Results of Radium and Röntgen Treatment in Inoperable Cancer of the Uterus and in Post-Operative Recurrence (Die unmittelbaren Ergebnisse der Radium- und Röntgentherapie bei inoperablem Uteruskrebs und bei postoperativen Rezidiven). Verhundl. d. l. russ. Krebskong., St. Petersb., 1914. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

This work is based on 15 of the author's own cases. He thinks the effect of the rays on cancer tissue is relatively elective. Small doses have a stimulating effect on cancer tissue, without irritating normal tissue, while medium doses have an inhibitory effect on the carcinoma and call forth protective ferments in the normal tissue. Large doses cause general necrobiosis. The practical results of treatment with radiant energy are not yet uniform enough; this mode of treatment must yet be regarded as in the experimental stage and should be used only in the hospital.

Von Holst.

Cobb, F.: Cancer of the Uterus, with Special Reference to the Possibilities of Cure by a Radical Abdominal Operation. Boston M. & S. J., 1914, clxxi, 731. By Surg., Gynec. & Obst.

Fourteen years ago the author became interested in the Wertheim extended abdominal operation, and for the last three years under the selective system of the Massachusetts General Hospital has been assigned all operations for cancer of the uterus, both of the cervix and of the fundus. During this time he has developed some original technique. His conclusions are based on a complete analysis of the end-results of all the cases of cancer of the uterus at the above hospital for the 14 years from 1900 to 1913 inclusive, 367 in number, of which 70

were his own personal cases.

Of the 367 cases of cancer of the uterus, 4 absolutely refused operation, 57 were considered totally inoperable, 173 could have only a palliative operation, amputation or curetting and cauterization, with or without ligation of the internal iliac arteries. There were 17 vaginal and 116 abdominal hysterectomies. In other words, 270 cases came too late for any attempt at a curative operation, an operability of only 36.2 per cent. (Fifty per cent of the patients coming to Wertheim in Vienna were operable.) The average duration of symptoms in the 230 inoperable and palliative cases before the patients came to the hospital was about a year, and it is doubtless true that cancer of the cervix may be

present many months and may even go into the inoperable stage with practically no symptoms.

There were 40 radical Wertheim hysterectomies in the hospital series, with an immediate mortality of 22 per cent and 50 per cent of cures. In addition there were 27 abdominal hysterectomies for cancer of the fundus. The immediate mortaility was 14.8 per cent, and of those in which the operation was performed over five years before only 42.8 per cent were cured. The author has done the Wertheim operation for cancer of the cervix 34 times with an immediate mortality of 5, or 14.3 per cent, and 7 abdominal hysterectomies for cancer of the fundus with no immediate mortality. Only 6 of his cases of cancer of the cervix were done more than five years ago; of these 5 are alive and well and free from recurrence from five to thirteen years afterward. The causes of death in the cancer of the cervix cases were as follows: One case died of peritonitis within forty-eight hours; one in twelve hours of shock; one on the tenth day, cause of death not determined at autopsy; one in the fifth week, of iliac thrombophlebitis; and one in the tenth week, of intestinal obstruction.

The author uses a combined spinal and ether anæsthesia. He does not believe in curetting and cauterizing as a distinct preliminary operation, but does it just after giving the spinal injection while the patient is being etherized. He frees the ureters in their entire course through the pelvis and lifts them with tapes. He considers the use of ureteral bougies unnecessary and dangerous. After freeing the vagina for a long distance from the bladder and rectum and lifting the ureters out of the way, he applies two Wertheim right-angle clamps and cuts between them with an electric cautery. Of late he has ligated the internal iliac arteries in the majority of his cases and finds that it materially reduces the hæmorrhage; he is convinced that this procedure does not cause any bladder complications or necrosis. He drains through the vagina with a strip of iodoform gauze, the peritoneal surfaces being sutured over the gauze to form a floor. The head of the bed is raised the first week and salt solution is given per rectum every five or six hours. Urotropine and an inlying catheter are essential.

C. H. Davis.

Tichoff, I. I.: The Radical Operation for Cancer of the Uterus by Laparotomy (Die Radikaloperation des Uteruskrebses per laparotomiam).
 Verhandl. d. l. russ. Krebskong., St. Petersb., 1914.
 By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The limits of the operation for cancer of the uterus must be extended in order to operate more radically and thereby get a greater percentage of permanent recoveries. This is possible  $(\tau)$  by bilateral ligation of the uterine and hypogastric arteries; (2) by transplantation of the ureters; and (3) by isolation of the abdominal cavity from the organs of the true pelvis. The ligation of the hypogastric artery was unsuccessful in only one of

200 operations performed by Tichoff. The immediate results of the method were as follows: In ligation of the uterine artery the mortality was 23 per cent, in ligation of the hypogastric 16 per cent, in transplantation of the ureters 15 per cent. Since the time of observation is too short the permanent results cannot be reported. Von Holst.

Zweifel, E.: Permanent Results after Operation for Recurrence in Cancer of the Uterus (Dauererfolge nach Rezidivoperationen bei Uteruscarcinomen). Arch. f. Gynäk., 1914, cii, 411.
By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Zweifel reports 23 cases of operation for recurrence in carcinoma of the uterus at the Jena Gynecological Clinic. Among them 20 women were operated upon 31 times for recurrences; 30 per cent of the cases are still alive after a period of freedom from further recurrence averaging seven and a half years. On the basis of these relatively favorable results Zweifel advises more frequent operation for recurrence, as well as more frequent clinical control of patients operated upon for cancer, especially during the first two years.

Borell.

Allmann: Non-Operative Treatment of Carcinoma (Zur nichtoperativen Karzinombehandlung). Strahlentherap., 1914, iv, 625. By Surg., Gynec. & Obst.

Allmann gives a report of the mesothorium treatment of carcinoma of the uterus at the St. George Hospital, in Hamburg. Large doses were used, 150 to 200 mg., applied for 24 hours with intervals between the treatments of 2 to 4 weeks. Nickelplated brass was used for filters, and in the beginning of the treatment lead filters also, expecially in cases where there was much ichorous discharge. The ill effects observed were: formation of fistulæ, severe tenesmus, hæmorrhage, fever, and nervous disturbances. In the intervals between the treatments arsenic, iodine, and cholin were given. Of 85 cases treated 15 died; in one case the course of the disease was hastened by the irradiation; 15 or 20 non-operable cases were made operable; 15 women who had recurrences or who refused operation are now capable of working and are free of A. Goss. symptoms.

Marek, R.: Further Experience in the Treatment of Myoma of the Uterus (Weitere Erfahrungen in der Behandlung der Uterusmyome). Wien. klin. Wchnschr., 1914, xxvii, 745.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Supravaginal amputation of the myomatous uterus is very much to be preferred to total extirpation. The latter is only performed in cases of malignant degeneration, in myomata of the cervix, in cases where there are large peritoneal wound surfaces on account of adhesions and where the myoma is complicated by tumors of the adnexa. Even patients with a very low hæmoglobin content are operated upon. The idea that myomata are benign should be given up, as sarcomatous degeneration

of myomata is much more frequent than is generally

supposed.

Because of the very good results obtained in the operative treatment of myomata of the uterus röntgen rays are used comparatively rarely for this condition. Of 16 patients treated by irradiation, 9 were cured, 4 improved, and 3 not improved. Röntgen rays are used only on patients who are afraid of the knife and in cases where operation is contra-indicated. The time has not yet come for röntgen treatment to be substituted for operative treatment of myoma of the uterus.

G. Hirsch.

## Gordon, O. A.: Histogenesis of Myosarcoma, with Report of Four Cases. Bull. Woman's Hosp., N. Y., 1914, i, 19. By Surg., Gynec. & Obst.

The author reports four cases of myosarcoma uteri which occurred in the Woman's Hospital during a period of less than two years. In none of the reported cases was the presence of any malignant condition noted before operation. The cases went to the operating-table as myomata uteri and the diagnoses were brought to light as a part of the routine examination of all operative tissues.

The following case is typical. A woman, aged 32, was admitted to the hospital with the following history: Menses regular since 13, with the exception of the past year; had two children, 10 and 11 years of age, both of whom were normally delivered; had suffered from an increasing menorrhagia for the past year, and for two months past had had a profuse vaginal discharge, yellow and watery without odor, and most profuse a few days before menstruation. Physical examination showed a symmetrical tumor in the hypogastrium, extending about a hand's breadth above the pubes. By manual examination the uterus was found to be enlarged, hard, irregular, and freely movable. A supervaginal hysterectomy was performed. On examination the uterus showed the following pathology: It was a balloon-shaped body of 13 cm. diameter, the shape being due to a large polypoid body 8 cm. long by 3 cm. wide, which arose from the side wall and appeared to be a highly ædematous polypoid myoma. A submucous myoma 3 cm. in diameter was found in the fundus. The polypoid myoma showed a hæmorrhagic infiltration of the lower portion of about 2 cm. in width. There was an area of hypostatic softening on the tip. Microscopical examination showed that the polyp consisted of highly cedematous muscular The edge of the polyp showed a macroscopically visible mass of dark-stained cells. These had no distinct outline toward the œdematous musculature; they were very numerous and were shaped like short spindles. There was a slight optical unrest in that portion. The diagnosis was myosarcoma in myomata polyposa.

In one other case the tumor was found to be in-

tramural.

The author discusses the histogenesis, giving the prevailing theory of Virchow, Ribbert, Conheim and Meyer. The weight of opinion seems to be

with Conheim and Meyer in the theory that sarcoma cells do not arise from mature muscle-cells, but from intermediate embryonal, undifferentiated cells. EDWARD L. CORNELL.

Hellmuth: Influence of Menstruation on Hæmolysis of Vaginal Bacteria (Übt die Menstruation einen Einfluss auf die Hämolyse der Scheidenkeime aus). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 589.

By Surg., Gynec. & Obst.

Some authors hold that hæmolysis is a specific characteristic of certain very virulent strains of streptococci. Others contend that it is only an accidental characteristic dependent on the blood content of the nutrient medium. If the latter assumption were true, hæmolysis would develop in ordinary streptococci during profuse menstruation

or metrorrhagia.

Hellmuth describes in detail a series of experiments undertaken to show whether hæmolysis does develop in vaginal bacteria during menstruation. He found that it did not; even in two cases where metrorrhagia had persisted for weeks hæmolytic bacteria could not be demonstrated. In the three cases in which hæmolytic bacteria were found he thinks that they did not develop during menstruation from non-hæmolytic ones, but reached the vagina through invasion or inoculation. He does not feel that he has proved that hæmolysis could not develop under long-continued hæmorrhage, as for example in myoma but he thinks his experiments are sufficient to prove that hæmolysis is not merely a result of the blood content of the nutrient medium of the bacteria. A. Goss.

Zekete, A.: Value of Bossi's Operation in Dysmenorrhœa and Sterility (Sul valore dell'operazione Bossi nei casi di dismenorrea e di sterilita). *Policlin.*, Roma, 1914, xxi, sez. pract., 1358. By Surg., Gynec. & Obst.

Zekete lauds the fine results obtained by systematic mechanical dilatation in cases of stenosis, deformity, or obstruction from any cause of the lumen of the cervix. In 18 cases the women had never conceived and menstruation was more or less painful. In six of the cases the mucosa showed signs of chronic inflammation or hypertrophy. The mucosa was curetted and touched with tincture of iodine and the intracervical stem pessary introduced and held in place by gauze packing which was changed each day, care being taken each time to see that the instrument was in place. The patient remained in bed for eight days and continued to wear the endo-uterine pessary for twenty days in all. It was removed and cleansed two or three times and never caused the least disturbance.

In the 20 cases treated for dysmenorrhoea, complete success was realized in 16, the cervix becoming of normal size and shape and no longer opposing any obstacle to the menstrual flow, and in the others the formerly extreme dysmenorrhoea has been very much improved. This systematic method

of treatment corrects infantile conditions and anteflexion, or both. In some cases the dysmenorrhœa did not develop until after marriage. A. Goss.

## Kosmak, G. W.: Effects on Subsequent Labors of Operations for Uterine Displacements. N. Y. St. J. Med., 1914, xiv, 489.

By Surg., Gynec. & Obst.

The two great divisions into which cases may be divided which demand operative relief for malpositions of the uterus are retroversion and procidentia. Kosmak refers to cases in which the Kelly suspension operation or the Gilliam operation has been done, in some of which difficulty in labor was experienced in that the position of the uterus made it hard for the head to engage; after that occurred labor proceeded normally. After ventrofixation, cæsarian section was necessary in several cases.

Attention is called to the fact that many operators perform the so-called interposition operation in women who may still bear children, and in several such cases cæsarian section was necessary, the incision passing through the posterior wall of the uterus. The author has observed that operative labors are frequent after ventro- and vaginofixation and that dystocia occurs even after ventral suspension has been performed, because the character of the operation, infection, etc., really produce fixation. Kosmak favors round ligament plications.

It may be stated in reviewing this paper that the old-style Kelly suspension should be done with the sewing of the anterior wall of the uterus to the peritoneum of the anterior abdominal wall, which new situation obviates many of the annoying features resulting from the old method, in which the posterior surface of the uterus was attached to the anterior abdominal wall. The author is none too severe in his criticism that the interposition operation should never be done without preventing future pregnancy. In any woman who still wishes to have children, sewing the anterior wall of the uterus to the anterior wall of the vagina endangers the patient's life if pregnancy occurs. Emphasis must be placed on the fact that whenever this operation is performed, there should be resection of a certain area of the tubes, or, the tubes should be cut at the uterine cornua and the interstitial portion of the tubes buried beneath the peritoneum.

This paper gives a thorough, rational analysis of the effect on subsequent labors of operations for uterine displacements. It is viewed from the standpoint of the obstetrician into whose hands these cases usually fall, and who is, therefore, fitted to express a practical opinion decisively.

S. W. BANDLER.

## Souther, C. T.: The Watkins-Wertheim-Dührssen Operation vs. Other Methods in the Treatment of Uterine Prolapse. Lancet-Clin., 1914, cxii, 582. By Surg., Gynec. & Obst.

The author gives the following indications and contra-indications for the Watkins operation:

1. The patient should be past the menopause or it should be agreed that a future pregnancy should be made impossible by proper treatment of the tubes.

2. A degree of cystocele to the extent of bulging

from the vagina should be present.

The uterus should present some degree of prolapse.

4. Any degree of prolapse of the uterus up to and including complete procidentia.

5. Certain types of retroversion with cystocele and descensus in patients at or past the menopause.

The contra-indications are:

r. An operator should be capable of handling any emergency in vaginal work and should be thoroughly familiar with practical details of a vaginal hysterectomy before attempting this operation.

2. Complicating fibroids are best dealt with

through the abdominal route.

3. Ovarian tumors and tubal complications should be dealt with through the abdomen; yet Dührssen, Wertheim, and others have removed large ovarian cysts and intraligamentous cysts by anterior vaginal cœliotomy.

4. When the condition of the cervix is suggestive of cancer the operation can very easily be converted

into a hysterectomy.

Neither ventral fixation nor hysterectomy will cure uterine prolapse. However, a properly performed Watkins' operation will cure when supplemented by a properly performed perineorrhaphy. Two points with reference to perineorrhaphy must be borne in mind: (1) There must be a coaptation of the levator muscles; and (2) the posterior vaginal wall must not be shortened; i.e., the crown stitch must not be used. A flap of the posterior wall can be removed in most cases, but a puckering crown stitch should not be put in. The vaginal wall is narrowed laterally, thus leaving the posterior vaginal wall as long as possible to prevent pressure bringing the cervix forward. Edward L. Cornell.

## Gardner, W. S.: Round Ligament Suspension of the Uterus. J. Alumni Ass. Coll. Phys. & Surg., 1914, xvii, 71. By Surg., Gynec. & Obst.

The author's paper is based upon the report of 62 cases of retrodisplacement of the uterus that have been treated by round ligament suspension, a part of them after the method of Gilliam. Of these patients 47 were relieved of their symptoms; in six cases the uterus remained in position but the symptoms were not relieved; in seven cases there was marked improvement, but not entire relief. the cases that were followed and examined, the uterus was found to be still in good position. author thinks the pessary is useful in cases of acquired retrodisplacements of recent occurrence; when of long standing, however, he finds the pessary is of very little value, and in retrodisplacement in nulliparæ almost useless. Gardner follows the Gilliam technique, or a modification, whereby the round ligament is pulled up through the inguinal S. W. BANDLER.

Sternberg, H.: The Isthmus of the Uterus (Zur Frage des Isthmus uteri). Beitr. z. Geburtsh. u. Gynäk., 1914, xix, 342.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

When Aschoff in 1908 showed that the uterus consisted of three segments he pointed out that the existence of the isthmus could be demonstrated only by microscopical examination. This three-fold division of the uterus is now denied by Büttner and Graesel, while it has been confirmed by Hegar, Ogata, Pankow, and Eva Moritz. Sternberg examined 41 uteri microscopically, 33 of them non-pregnant and 8 of them pregnant, and could demonstrate an isthmus according to Aschoff's definition in all of them.

According to the authors, Büttner's contention that the epithelium in the body is like that in the ismthus is due to the fact that he overstained his sections with concentrated mucicarmin solution, so that not only the protoplasm of the epithelial cells in the isthmus but also that in the body seemed to be colored red. The isthmus is a transition segment between the cervix and the body of the uterus, with a characteristic superficial epithelium. Each physician can decide for himself whether this superficial epithelium of the isthmus is to be compared morphologically more with that of the body or functionally more with that of the cervix.

### ADNEXAL AND PERIUTERINE CONDITIONS

Aschner, B.: Morphology and Function of the Ovary under Normal and Pathological Conditions (Über Morphologie und Funktion des Ovariums unter normalen und pathologischen Verhältnissen). Arch. f. Gynäk., 1914, cii, 446. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The morphology of the so-called interstitial gland of the ovary is discussed. There has been an increasing tendency recently to hold this gland responsible for the internal secretory action of the ovary. From his own numerous experiments on the most varied species of animals, the author tries to settle the much disputed question of the interstitial ovarian gland. From the detailed histological examination of the ovaries of his animals at all ages he finds that the interstitial ovarian gland is most pronounced in rodents, insectivora, chiroptera, and animals of prey in their early youth. It is developed from the atresic ovum follicles of the theca interna. With the appearance of the first corpus luteum the interstitial ovarian gland of these animals decreases, so that there seems to be a certain reciprocity between the corpus luteum and the interstitial ovarian gland. Good development of the interstitial glands in these animals is closely connected with their fertility.

In animals which bear many young at the same time there is a highly organized ovarian gland at the age of sexual maturity in contrast with the condition in man and in animals only bearing one or two young at a time, such as hoofed animals and monkeys. In the latter the interstitial ovarian gland is in a rudimentary condition, and with the appearance of the first corpus luteum of menstrua-

tion disappears completely.

By the aid of Abderhalden's reaction, Aschner tries to show the dependence of various clinical conditions and diseases on the ovary, and the dysfunction of the ovary in such conditions. In normal menstruation and normal pregnancy there is no katabolism of ovarian and corpus luteum substance, but in individual cases of toxicoses of pregnancy and atypical cases of menstrual or intermenstrual hæmorrhage there is. Also in ovarian hæmorrhages, whether during puberty or the climacteric, ovarian substance is katabolized in the majority of cases, and this shows dysfunction of the ovary. As to the relation between chlorosis and ovarian activity, Abderhalden's reaction is positive in many cases, especially in thoses cases of chlorosis that are accompanied by menstrual disturbances. This again shows dysfunction of the ovary and indicates that the ovary is one of the etiological factors in the production of chlorosis. In addition there is a marked dysfunction of the spleen in chlorosis, as is shown by the fact that splenic tissue is katabolized in the majority of Therefore, in the treatment of chlorosis, in addition to iron, spleen tablets should be used. The etiological connection between ovarian secretion and myoma, which has heretofore been assumed, is supported by the positive outcome of the Abderhalden reaction. In the amenorrhœa of the menopause, in contrast with ovarian hæmorrhage, the Abderhalden reaction was negative. Here it is a question of hypo- or afunction of the ovary. Therefore in the treatment of the symptoms of the menopause the use of ovarian tablets is justified. In a series of other diseases the ovary is regarded in some as a causative factor, and in others as an organ that is injured secondarily.

Bonn, H. K.: An Uncommon Anomaly of the Left Ovarian Artery and Vein. Urol. & Cutan. Rev., 1914, xviii, 584. By Surg., Gynec. & Obst.

The anomaly of the left ovarian artery and vein described was discovered by Bonn in the course of a

dissection of the left kidney.

Bonn states that in his subject the left renal artery proper sprang from the aorta at the usual site and entered the kidney at a central hilum. One and one-quarter inches below the origin of the left renal artery an anomalous artery only slightly smaller in caliber than the oridnary lead-pencil was given off from the aorta and entered the lower pole of the kidney. This anomalous renal artery divided into two branches just before entering the kidney, and was two and one-quarter inches in length.

The left ovarian artery was given off by this anomalous renal artery one and one-quarter inches from its point of origin. The left renal vein was formed by the union of a vein coming from the lower pole of the kidney at the site of entrance of the

anomalous renal artery, with the left ovarian vein at a point posterior to and to the right of the origin of the left ovarian artery. This vein continued to the right and joined the renal vein proper at the left border of the aorta. The veins to the central hilum and the lower pole of the kidney lay posterior to both the anomalous renal and the ovarian arteries.

A possible unusual origin of the right ovarian artery was also found in the same cadaver. An extensive search of the abdominal aorta below the origin of the renal arteries failed to disclose any vessel which could possibly be the right ovarian artery, but a vessel which faced downward toward the pelvis was given off by the aorta in the interval between the origins of the celiac axis and the superior mesenteric. This vessel had been torn off at practically its point of origin; therefore the author's assumption that this vessel was the right ovarian artery is admitted by him to be open to question.

English and German anatomies mention only a few cases of anomalous origin of the ovarian vessels.

Grad, H.: Carcinoma in the Wall of a Large Hydrosalpinx Implanted from a Primary Carcinoma of the Peritoneum. Bull. Woman's Hosp., N. Y., 1914, i, 24.

By Surg., Gynec. & Obst.

A case of carcinoma in the wall of a large hydrosalpinx is reported in a woman 55 years of age who had been married 31 years. She had one child the first year of her marriage and had had no miscarriages. She had been perfectly well until two months before operation, at which time she noted a slight vaginal discharge of a watery nature. At the same time she developed an abdominal pain on the right side, which was of a mild character, becoming quite severe at times. The patient presented a good general appearance, with no anæmia and no loss of weight. She slept well, had a good appetite, but felt constantly fatigued. On examination there was pain on pressure immediately above the symphysis pubis and in both groins.

Bimanual examination revealed several nodular masses in the pelvis. They were firm and somewhat tender to touch. The uterus could not be clearly outlined and the nodular masses seemed to be connected with it. The cervix contained a small polypus. On rectal examination the same nodular masses were plainly palpable and more tender. A diagnosis of fibroids of the uterus was made.

At operation peritoneal adhesions were encountered. After breaking up the bowel adhesions, two large distended fallopian tubes came into view. The right tube was larger—6 in. in length—and the fimbriated end was firmly adherent to the posterior wall of the uterus. The appendix was adherent to the tube. The adhesions to the left tube were firmer. The uterus was small and atrophied. A double salpingo-oöphorectomy was done, also appendectomy. The cervix was amputated because of the existing polyp.

On examination the tube was congested and showed a round-cell infiltration. The wall was invaded by irregular branching villi and nests of cells. A diagnosis of carcinoma of the tube was made. Six months after operation the patient again presented herself, at which time there was ascites and the abdomen was distended. The abdomen was again opened and the peritoneal cavity was found to be studded with small tumorous masses, some of which were as large as a hen's egg while others were as small as a millet seed. The pelvis was full of nodular masses, but the small, atrophied uterus was perfectly normal. These nodules were found to be cancerous. The patient made a prompt recovery from the operation but died four months later from carcinomatosis of the peritoneum.

EDWARD L. CORNELL.

## EXTERNAL GENITALIA

Rittershaus: Primary Carcinoma of the Vulva (Über das primäre Carcinom der Vulva). Deutsche Ztschr. f. Chir., 1914, cxxviii, 426. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Three cases of primary carcinoma of the vulva are reported, all three with metastases in the inguinal region, the third with advanced general cachexia. In the first two cases the tumor was extirpated, together with the glandular metastases, with good immediate results. The first case came back after ten months with a small recurrence, while there has been no report of the late result in the other. Carcinoma of the vulva generally attacks women who are past 60 and it is on the whole not very frequent. Counting the author's cases about 270 cases have thus far been reported. The treatment consists in extensive early operation, the inguinal glands also being removed whether metastases can be felt in

## MISCELLANEOUS

Kupferberg, H.: Röntgen, Radium, and Mesothorium Rays in Gynecology (Röntgen-, Radium-, und Mesothoriumstrahlen im Dienst der Gynäkologie). Fortschr. d. Med., 1914, xxxii, 145.

By Surg., Gynec. & Obst.

The author succeeded in curing, within the course of two or three months, all myomata treated, with 2 to 10 series of treatments, varying according to the

age of the patient from 30 to 100 X.

them or not.

Myomata in young women should be excluded from this treatment, as should submucous and subserous myomata, those with pedicles, those with an ichorous discharge, and those showing evidence of malignant degeneration. Röntgen treatment is also to be preferred absolutely to every form of operative procedure in metropathies and dysmenorrhœa, and for artificial sterilization, because it is absolutely without danger and does not produce the unpleasant by-effects of operation. Wertheim and Latzka have held that it was contra-indicated in

carcinomata of the body and cervix of the uterus, but the author thinks their experiments were not thorough enough and their conclusions not well founded. In contrast with their results are the brilliant ones obtained by Krönig, Gauss, Döderlein, and Bumm.

The unfavorable cases for radium treatment are the abdominal carcinomata with distant metastases and recurrences after apparent radium cure; all inoperable carcinomata that are not too far advanced are favorable. Radium treatment gives at least as good results as operation, is absolutely without danger, and gives great hopes for the future.

A. Goss.

Wolffenstein, W.: Frequency and Prognosis of Gonorrhœa of the Rectum in Vulvovaginitis in Childhood; the Curability of Vulvovaginitis (Über die Häufigkeit und Prognose der Rectalgonorrhöe bei der kindlichen Vulvovaginitis; die Heilbarkeit der Vulvovaginitis). Arch. f. Dermat. u. Syph., 1914, cxx, 177.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In contrast with other authors Wolffenstein found 14 cases of gonorrhœa of the rectum in 26 cases of gonorrhœal vulvovaginitis, a percentage of 54. It was treated, like gonorrheal affections of other mucous membranes, with silver salts. He found that the rectal gonorrhœa was at least as stubborn as that of the vulva and vagina. The gonococci disappeared after 7 to 260 days of treatment, the average length of time being 61 days. Gonorrheal vulvovaginitis was under treatment 28 days to o months. Endocarditis occurred as a complication once, but there were no joint complications. Of the 26 cases of gonorrhœal vulvovaginitis 20 were examined later and 18 were found well; of the 14 cases of rectal gonorrhœa, 9 were examined later and all of them found well. GRÜNBAUM.

Schneider, N. N.: Effect of Removal of Sexual Glands and Thyroid on the Gas and Nitrogen Metabolism in Females (Zur Frage über den Einfluss der Entfernung der Geschlechtsdrüsen und der Schilddrüse auf den Gas- und Stickstoffwechsel bei Weibchen). Dissertation, St. Petersb., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Schneider's work may be regarded as a supplement to Rovinsky's work, but differs from it in that the author's experiments were performed on female rabbits and dogs, and the metabolism was determined partly in well-nourished animals. The author found, in agreement with Rovinsky and other authors, that thyroidectomy in female animals produces an increase in weight, a decrease in gaseous exchange, and decreased albumin catabolism with a simultaneous increase in the deposition of albumin in the body. The castration of a female dog caused an increase in weight and a decrease in nitrogen excretion, while gaseous exchange was not uniform. An animal that had had the thyroid removed was castrated before the cachexia resulting from deprivation of the thyroid had begun. The castration led to changes in metabolism similar to those resulting from castration of an animal with an intact thyroid.

Thyroidectomy in a castrated animal causes the usual changes: increase in weight, decreased catabolism of nitrogen, reduction of oxygen intake and carbonic acid excretion. The thyroid, like the ovaries, is an organ of internal secretion which plays an important part in albumin metabolism.

Stromberg.

Figueroa, S.: An Unusual Laceration of the Female Urethra. Surg., Gynec. & Obst., 1914, xix, 674. By Surg., Gynec. & Obst.

The patient, a woman of Maya Indian descent, 47 years old, had complained of urinary incontinence ever since an abortion twelve years previous.

Upon examination the mucosa of the vestibule appeared inflamed, the clitoris was easily located, but the urethral opening was absent. Close inspection disclosed a thick conical projection of mucous membrane of about an inch in length hanging down from the distal portion of the anterior vaginal wall, with which it was connected by a broad base; at about the upper third of the posterior face of this projection the vaginal tubercle could be seen; on its anterior face there was a shallow groove running from its tip to its base; at the anatomical position of the urethra was the anterior end of a second groove, shallower than the one described, with which it met, forming an angle occupied by a urethral caruncle, around which the urine could be seen flowing out continuously. It was evident that the two grooves represented the halves of the longitudinally torn urethra, which was torn during the abortion of a 5-months' fœtus manually extracted by a midwife.

In all probability the urethra in a state of dilatation was caught and torn by the midwife's fingers. A plastic operation was performed.

## OBSTETRICS

### PREGNANCY AND ITS COMPLICATIONS

Hausmann, T.: Results of Methodical Palpation of the Ileocæcal Region, with Special Reference to Ectopic Tubes (Ergebnisse der methodischen Palpation der Ileocöcalgegend mit besonderer Berücksichtigung der ektopischen Eileiter). Monatschr. f. Geburtsh. u. Gynäk., 1914, xxxix, 772.

By Zentralbl, f. d. ges. Gynäk, u. Geburtsh, s. d. Grenzgeb.

The author discusses his method of topographical deep palpation which makes it possible in a great majority of cases to palpate the appendix. He speaks of various factors in the differential diagnosis between appendicitis, diseases of the right urinary tract, and tubal catarrh, and thinks that sensitiveness of the different segments of the right psoas is significant. He considers especially the so-called ectopic fallopian tube, which may be in a perfectly normal condition but may be displaced into the right iliac fossa, and so be confused with the appendix. Methodical palpation and support of the genitals will guard against such a mistaken diagnosis. He discusses several cases in point, for details of which the reader is referred to the original.

Stokes, M. B.: Cæsarean Section in the Treatment of Eclampsia. Texas St. J. Med., 1914, x, 268. By Surg., Gynec. & Obst.

Stokes compares the methods of treatment in eclampsia and describes three cases of primipara with marked urinary symptoms upon whom he performed cæsarean section, the two mothers and all three children surviving. He makes a plea for the further use of the method in eclampsia of primiparæ when there is a rigid cervix, or in multiparæ who have sclerous cervixes, whether there is any obstetric indication or not. In conclusion, he states that up to the eighth month the vaginal route is the operation of choice, but that after that time the technical difficulties are so increased that abdominal section is to be preferred, and the best results will be obtained if the operation is performed before the patient has undergone an eclamptic L. K. P. FARRAR. convulsion.

Crosthwait, W. L.: Cæsarean Section, an Operation of Choice in Borderline Cases. Texas St. J. Med., 1914, x, 265.

By Surg., Gynec. & Obst.

The author contrasts the merits of cæsarean section with alternative procedures in so-called borderline cases and the favorable results obtained in five cases operated upon by him; viz., recovery of five mothers and four infants, the fourth infant being non-viable at the time of operation.

recognized indications for cæsarean section are as follows:

I. When the conjugate diameter is less than

2. The presence of neoplasms, malignant disease of the cervix, double vagina, atresia, or following ventral suspension.

3. Tonic contraction of the uterus in tedious

labor.

4. Placenta prævia.

5. Eclampsia.

6. Impacted face or shoulder.

Prolapse of the umbilical cord.

8. Heart lesions.

9. Marked disproportion between the size of the pelvis and the fœtal head.

The following are classed as borderline cases:

1. Primipara, when the pelvis is less than the normal size, or when there is an abnormality in the size or position of the fœtus, and if the patient is thirty or more years of age, as the fœtus in such cases is apt to be large and well developed.

2. Multipara, when there is a history of instrumental or difficult labors, especially the latter. It several years have elapsed since the last confine-

ment and the fœtal head is large.

3. All cases of placenta prævia.
4. Eclampsia, especially in primiparæ with rigid cervixes, or in multiparæ with histories of difficult labors, and in all cases of apparently small pelves.

5. Heart complications with marked valvular lesions or arteriosclerosis with high blood-pressure, when the indications point to a tedious labor.

Great stress is laid on the importance of careful measurement of the pelvis in all primiparæ, and the securing of an accurate history and measurement of the pelvis in multiparæ who have had previous abnormal labors. All positive cases for cæsarean section may thus be discovered before labor, and all borderline cases may be recognized in time to give cæsarean section the preference over other methods of delivery. L. K. P. FARRAR.

Credé-Hörder: **Tuberculosis** and Pregnancy (Tuberkulose und Schwangerschaft). XI Internat. Tuberkul.- Konf., Berl., 1913, p. 372. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Pregnancy in women with pulmonary tuberculosis may cause open tuberculosis, but in normal women pregnancy causes no predisposition to tuberculosis. Tuberculous women suffer more during pregnancy than normal ones because of (1) insufficient aëration of the lungs; (2) defective nutrition in poorly nourished women; (3) insufficient blood supply;

quired.

(4) and the weakening of the protective substances of the body.

Two stages of tuberculosis must be sharply

distinguished as follows:

I. The first stage is marked by infiltration of the apices of the lungs, and of the parenchyma of the lungs, and by catarrh of the apices of the lungs. (a) In well-nourished tuberculous women pregnancy has no effect and there is no indication for abortion. The woman should be examined at intervals of a month by an internist, should be given sanitarium treatment, should be given great care during labor and the puerperium, and she should not be allowed to nurse the child. If the tuberculosis continues to progress after delivery, tubal sterilization should be performed. At any rate sanitarium treatment should be given for a year after delivery. (b) Poorly nourished tuberculous women may become slightly worse during pregnancy, labor is apt to be very difficult for them, and they are apt to have a febrile puerperium. If the pregnancy is only of a few weeks' duration, abortion is indicated; if it is of months' duration it should be allowed to continue. The patient should be under the constant care of an internist, nursing should be absolutely forbidden, and further conception should be prevented.

2. The second stage is marked by caverns, infarcts, hæmoptysis, and infiltration of the entire lobes. In this stage pregnancy is dangerous. In spite of this fact, treatment should be as above in I (b). If there is a vital indication, abortion may be performed. This must be decided in each case. In borderline cases abortion must often be performed, but many times it can be allowed to continue. In all cases an internist should be consulted

and his opinion secured in writing.

The author urges that a central institution for caring for tuberculous pregnant women be established in Berlin, as it is desirable that the operation for sterilization be performed in a sanitarium. Limitation of procreation by persons with severe tuberculosis is desirable in the interests of society.

GRAEUPNER.

Zuloaga, P.: Suprarenal Insufficiency in Pregnancy (De l'insufficance surrénale dans la grossesse). Arch. mens. d'obstêt. et de gynéc., 1914, iii, 433.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author is inclined to think that the cause of many cases of sudden death during pregnancy, labor, and the puerperium is a defective functioning of the suprarenal glands, and recommends that in women with severe vomiting of pregnancy symptoms of this condition should be looked for. Where such an insufficiency is found, or even suspected, he recommends organotherapy with fresh suprarenal substance, beginning with 1.5 to 2 gm. and advancing to 5 gm. per dose, or a tablet of as much as 30 cg. three times per day; or he gives adrenalin solution 1:1,000, five drops every twelve hours, gradually increasing to eight or ten drops per dose.

In very urgent cases he prefers subcutaneous infusion of salt solution containing 1 ccm. of adrenalin solution to one-fourth of a liter of salt solution. Pregnancy should be interrupted only when this treatment fails. Such cases need to be watched carefully, even after the emptying of the uterus, in order to prevent complications. Later conception should be prevented in women who have shown severe disturbance in the function of the suprarenals during pregnancy.

McAllister, V. J.: The Kidneys and Heart in Pregnancy, with Special Reference to the Blood-Pressure Changes. Med. Press & Circ., 1914, xcviii, 536. By Surg., Gynec. & Obst.

Uncomplicated valvular lesions are not particularly serious. Successive pregnancies are well borne provided they are separated by an interval of several years.

The gravest cardiac lesions are those in which the musculature is involved. To recognize and properly appreciate these changes, experience and careful observation with functional tests are re-

Combined cardiac and renal lesions complicating pregnancy are extremely serious. In these cases a study of the blood-pressure is important, as the work of the heart is greatly increased when the blood-pressure is markedly elevated.

The acute kidney of pregnancy is not usually associated with much increase in pressure, and it rapidly responds to treatment. Its effect is only transitory.

In the chronic form the blood-pressure is markedly and progressively increased and usually resists treatment. In some cases the elevation is compensatory.

The author feels that a moderately high pressure accompanied by other signs and symptoms of the chronic kidney of pregnancy is favorable and renders the onset of eclampsia more remote.

A. C. BECK.

Bondy, O.: Pernicious Vomiting of Pregnancy
(Zur Lehre von der Hyperemesis gravidarum).

Monatschr. f. Geburtsh. u. Gynäk., 1914, xxxix, 751.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Bondy discusses three cases of severe vomiting of pregnancy, which were of special interest among 21 that occurred in 10,000 deliveries at the Breslau gynecological clinic. In the first two cases abortion was performed, notwithstanding which both patients died, the first after 11 days with symptoms of uramia, the second without the abortion having taken place, although the membranes had ruptured two days before; the pregnancy was in the third to fourth month. The post-mortem findings in both cases are described by Heinrichsdorff. In the first case there was acute embolic nephritis and septic endometritis. The second case showed acute yellow atrophy of the liver. The third case was treated with the serum of a pregnant woman and recovered.

Bondy thinks that perhaps in the second case he waited too long to perform the abortion. He discusses the etiology and believes that it is a toxicosis on which psychic influences may have a specially harmful effect. He does not agree with Heinrichsdorff that the post-mortem findings argue against a toxicosis, but he does not regard the findings as a proof of such a toxicosis.

ROTHE.

Le Loirier, V.: Medical Treatment of Pernicious Vomiting of Pregnancy Based on the Most Recent Experience (Le traitement médical des vomissements graves de la gestation d'après les données les plus récentes). Clinique, Par., 1913, viii, 631.

By Zentralbl, f. d. ges. Gynäk, u. Geburtsh, s. d. Grenzgeb.

Pernicious vomiting develops on a neuropathic basis, and is a sort of placental toxemia in which the excretion of toxins and the formation of antibodies is insufficient and this is supplemented by insufficient emptying of the intestine. As a consequence of the vomiting marked inanition appears, and there is great loss of water and acidosis of the body. The patient must first be isolated and removed from her ordinary surroundings, then the stomach placed absolutely at rest; the intestines should be emptied by purgatives and the loss of water replaced by sugar infusions, three the first day, of 500 gm. each. On the second day the 500-gm. sugar infusions are given twice, also three to four rectal infusions of I liter each, by the drop method, through a Nélaton catheter, 5 to 10 gr. soda being added to the infusion for the acidosis. On the third day the treatment is repeated, and in addition every half hour and, later, every quarter of an hour, a teaspoonful of mineral water is given. When the water is no longer vomited, milk may be given, a spoonful at a time instead of the water, or if the patient does not like milk, purée of potatoes or ices may be given. Ordinarily the first part of the scheme of treatment suffices to put a stop to the vomiting. If it does not, however, the infusions and rectal injections should be continued, and the injection of Ringer's solution, horse serum, and the serum of a pregnant woman tried, in the order named; at the beginning of the treatment the serum of a pregnant woman should be prepared; for this, however, normal human serum may be substituted. Woman's serum is to be preferred to man's; the serum of the husband should not be used. A Wassermann examination should always be made before any treatment is undertaken.

This scheme of treatment should be modified to suit the case; sometimes it must be hastened, but as a rule it gives good results.

Frankenstein.

Farani, A.: A Case of "Polyneuritis Gravidarum" (Ein Fall von "Polyneuritis gravidarum"). Zentralbl. f. Gynäk., 1914, xxxviii, 802.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The patient, a 29-year-old VIII-para, from the seventh month of pregnancy had been troubled with

profuse diarrhoea and with cedema of the legs; in the eighth month she had disturbances of sensation and motion in the lower extremities. Examination by the author nine days post-partum showed atony of the uterus caused by cedema of the uterine musculature, probably phlebitis of the uterine vein and phlegmasia alba dolens in the right leg; peripheral nervous disturbances of the extremities, spontaneous disturbances of sensation disturbances of motion in all the extremities, and atrophy of the feet and hands at the metatarsus and metacarpus. The diagnosis was polyneuritis from intoxication of pregnancy. The patient recovered after four months' treatment with strychnine, massage, faradization, and sea baths.

GRÜNBAUM.

## LABOR AND ITS COMPLICATIONS

Gardiner, J.: Post-Partum Hæmorrhage and Its Treatment. N. Y. M. J., 1914, c, 1067. By Surg., Gynec. & Obst.

Post-partum hæmorrhage is a rare condition occurring in only about 0.44 per cent of cases (Hofstatter). Clinically there are 2 varieties: concealed and visible. For diagnosis of the former condition the uterus must be closely watched through the abdominal wall. The author cites a case of this kind in which the placenta was manually removed and an abdominal binder applied; also ergot and pituitrin were given.

Visible hæmorrhage may arise from any part of the gernerative tract. The author cites a case of hæmorrhage from a ruptured varix controlled by compress and 20 ccm. human serum. Hæmorrhage from a lacerated cervix is sometimes serious and hard to control. A case is cited where ligation was impossible and packing was resorted to.

In the treatment the first factor is to control the bleeding. The patient is placed in the Trendelenburg position, the abdominal aorta is compressed digitally or mechanically (Momburg's belt). If the hæmorrhage is from the uterus it should be stimulated by massage and by hot intra-uterine douches—115° to 120° F.—of a weak iodine solution. If contraction does not occur the uterus should be packed with strips of sterile gauze. After packing, an abdominal binder and sometimes a compress (as a sandbag) are used. Ergot and pituitrin are also used. Hysterectomy is used as a last resort.

Ainley, F. C.: Hebosteotomy. South. Calif. Pract., 1914, xxix, 351. By Surg., Gynec. & Obst.

Basing his opinion upon the results in 20 cases of pubiotomy (hebosteotomy), in 6 of which he was the operator, the author concludes that the operation has gained a permanent place in the practice of obstetrics. In one instance, a case of breech presentation, the saw was placed prophylactically, but it was unnecessary to cut the bone.

Perhaps the operation is most useful in cases of

funnel pelvis, for frequently with this type of contraction the post-operative enlargement of the pelvis proves sufficient to permit spontaneous delivery

in subsequent labors.

In cases of moderate pelvic contraction—conjugata vera 7.5 to 9.5 cm.—the operation comes into competition with the induction of premature labor and cæsarean section. The high mortality among premature infants makes the induction of labor undesirable. And since the test of labor materially increases the maternal mortality after cæsarean section but not after pubiotomy, whenever this test is desirable, the latter operation should be the one chosen. On the other hand, if the conjugata vera is less than 7.5 cm. cæsarean section should be performed at the onset of labor.

Pubiotomy is performed in the interest of the child and is not indicated if the fœtus is dead; craniotomy is then the procedure of choice. Likewise, in infected cases pubiotomy is contra-indicated.

Under proper conditions pubiotomy is attended with a maternal mortality of 2 per cent or less and with a feetal mortality of 10 per cent or less.

The immediate results after publication are more satisfactory in slightly built than in heavy women. The former suffer very little, while some of the latter experience some difficulty in locomotion for a few months after the operation. J. M. Slemons.

### PUERPERIUM AND ITS COMPLICATIONS

Daniel, C.: Diagnosis and Treatment of Puerperal Infections (Diagnostic et traitement des infections obstétricales). J. de chir. de Bucarest, 1914, i,

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In general the author's opinion agrees with that of the majority of German obstetricians; he differs only in his very active local treatment in the beginning of the infection. With the first rise of temperature an intra-uterine douche is given, and if the temperature does not fall it is repeated. If in spite of this second douche the fever remains above 38° and chills occur, curettage is performed if it is believed that remnants of the ovum remain in the uterus. The author does not say how this is to be determined, as he does not believe that bacteriological examination of the lochia and of the blood are of decisive importance. In the prophylaxis of infection he recommends the strictest asepsis and repeated vaginal douches before and during labor. RUHEMANN.

Zowjanoff: Curettage of the Puerperal Uterus (Zur Curettage des puerperalen Uterus). Festschr. f. Prof. Pobedinsky, 1914.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Zowjanoff reports 17 cases of curettage of the puerperal uterus in infected cases with retention of remnants of membranes. Ordinarily the curettage was done on the third or fourth day of the puerperium after the first rise in temperature. No deaths

resulted. Six cases were bacillary infection, three pure streptococcus and three mixed bacillary and

streptococcic infection.

The conclusions are: Curettage can be used in certain forms of puerperal fever. When performed as early as possible in cases of retention of membranes or blood-clots it acts prophylactically against puerperal infection. It may be performed on any day of the puerperium, but the effect is best when the operation is performed on the third or fourth day post-partum. Thorough disinfection of the uterus after the curettage is necessary. The curettage causes strong retraction of the musculature of the uterus. Perforation is excluded if the dull curette is used. Contra-indications are inflammation of the parametrium or perimetrium and a coating of the cervix, as well as general infections.

JENTTER.

## **MISCELLANEOUS**

Fetzer, M.: Specificity of the Abderhalden Reaction (Über Spezifität der Abderhaldenschen Fermentreaktion). Monatschr. f. Geburtsh. By Surg., Gynec. & Obst. Gynäk., 1914, xl, 598.

Fetzer finds that the Abderhalden reaction is strongly specific for pregnancy. In eclampsia, liver as well as placenta was katabolized. He gives a table of 40 cases known clinically or from operation to have been pregnant; the reaction was positive in all but one, in which it was doubtful. He also gives tables showing results in non-pregnant cases, cases of carcinoma, and febrile disease, and of ectopic pregnancy, all of them confirming the marked specificity of the reaction. A. Goss.

Heinemann, F.: The Value of Antitrypsin Determination in Gynecology and Obstetrics (Über den Wert der Antitrypsinbestimmung in der Gynäkologie und Geburtshilfe). Monatschr. f. Geburtsh. u. Gynäk., 1914, xxxix, 768.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Heimann — not Heinemann — gives the results of antitrypsin determinations with the aid of Fuld's casein method. The antitrypsin titer is increased not only in pregnancy and carcinoma, but also in febrile diseases of the female abdominal organs. On the other hand, in certain cases of pregnancy or carcinoma the increase in antitrypsin was not observed. Since there is a number of other diseases, such as nephritis and Basedow's disease, in which the antitrypsin titer may be markedly increased, it cannot be used for specific differential diagnosis. The method, which on technical grounds is not adapted to general use, can only be used to supplement other methods of diagnosis. GRÄFENBERG.

Harrison, V. W.: The Uses and Abuses of the Pituitary Extract in Labor. Virg. M. Semi-Month., 1914, xix, 391. By Surg., Gynec. & Obst.

The author believes that the pregnant woman is, as a rule, treated inhumanely. In reference to "twilight sleep" he states that it has been abandoned by men in this country who used it as early as 1902. He also deplores the misuses that forceps

have been put to.

The main part of his article, however, treats of pituitary extract, and he states that there are definite contra-indications for its use. The action of the drug usually takes place inside of six minutes and should not be repeated oftener than every hour. If the first dose should not take effect, another may be given in half an hour. The extract also caused contraction of the musculature of the bladder, making catheterization unnecessary in any of the author's cases. In 20 per cent of his cases it caused evacuation of the bowels. Blood-pressure is markedly raised by the first administration—20 mm. Hg. in some cases.

Following administration of the drug Harrison had a case of angina pectoris, and another case

in which the child developed convulsions.

Contra-indications to its use are: normal labor, high blood-pressure, arteriosclerosis, and nephritis with insufficiency, small birth-canal, an undilated cervix, or a tumor blocking the pelvis. It should not be given in a case of exhausted uterus until the organ has had time to rest. It may be used to hasten the contraction of the uterus when delivering the second of a pair of twins.

Indications to its use are: uterine-inertia, postpartum hæmorrhage; and at times it is used to

shorten the third stage of labor.

The author has found great success with its use in primiparæ. Some of the bad results from its indiscriminate use are: tear of the cervix, rupture of the uterus, detachment of the placenta prematurely, and also hæmorrhage from the uterus an hour after its administration. EUGENE CARY.

Santi, E.: Comparative Study of the Effect of Extract of Hypophysis from Pregnant and Non-Pregnant Animals on Non-Striated Muscle-Fiber (Vergleichendes Studium über die Wirkung des Hypophysenextraktes von trächtigen und nicht trächtigen Tieren auf die glatte Muskelfaser). Arch. f. Gynäk., 1914, cii, 432.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Santi made his experiments with extract of hypophysis from the cow; he used a segment of the œsophagus of the frog as an indicator. The experiments were so simple that errors were excluded. The contractions of the smooth muscle showed greater height and width when, instead of salt solution, extract of hypophysis from a non-pregnant animal was poured over it; there was a further change in the same direction when extract of hypophysis from a pregnant animal was used.

When muscle was resting after exhaustion in salt solution it could be made to work again by being subjected to the action of extract of hypophysis; the action was more vigorous if the extract was from a pregnant animal. By modifying the order of the experiments these varying degrees of action could be observed one after the other in the same specimen. The more advanced the pregnancy the greater the degree of activity of the extract. The extract from the male was more active than that from the non-pregnant female, and almost as

active as that of the pregnant female.

On these experiments, performed on muscle from cold-blooded animals, Santi bases a hypothesis as to the cause of the beginning of labor. He believes that it may safely be assumed that labor begins when the non-striated muscle-fibers of the uterus can no longer withstand the irritation of the excretion of the hypophysis. If this is true premature delivery could be explained as a result of hyperfunction of the hypophysis. It is not certain that this effect can be attributed to the hypophysis alone; it may be supplemented by the secretion of other ductless glands. FRANKENSTEIN.

Hedley, J. P.: Sterility in Women. Univ. M. Rec., By Surg., Gynec. & Obst. 1914, vi, 97.

Hedley states that from 15 to 20 per cent of the cases of sterility are due to the husband, and therefore his condition should be carefully investigated before any active steps are taken for the relief of sterility in the wife.

Three years is given as the most probable limit of fecundation, and after that time the probability of conception becomes less and less with each succeeding year. Only 7 per cent of women who go past

this time-limit bear children.

Sterility may be (1) absolute — when pregnancy is impossible; (2) contingent — when pregnancy is possible, but not probable. Either type may be congenital or acquired.

The absolute congenital type of sterility is due to faulty development of the generative organs; e.g., uterus, tubes, ovaries, etc. Malformations of the vagina may also be included in this category.

The absolute acquired type of sterility may be due to the destruction of the essential parts of the generative system: tumor formation, inflammation,

surgical removal, etc.

The contingent congenital type of sterility may be due to lack of development of the ovaries or uterus, the toughness of the ovarian stroma, thus preventing proper rupture of the follicles, and a multiplicity of abnormalities in the uterus and vagina which increase the difficulty of the spermatozoon entering the uterus. Other causes may be an acute anteflexion of the uterus, lack of sexual desire, and escape of the seminal fluid from the vagina after coitus.

The contingent acquired type may be due to inflammation of the pelvic organs - particularly gonorrheal; pelvic tumors that entirely or partially obstruct the passage of the ovum downward or the spermatozoön upward; inflammations of the vagina; conditions that cause dyspareunia; and, finally, certain general diseases; viz., scarlet fever, mumps, obesity, severe forms of nephritis, chlorosis, diabetes, myxœdema, and chronic alcoholism.

In dealing with sterility it is of the utmost importance to ascertain the cause or causes of such condition. If it is found that the case in question is one of absolute sterility, nothing can be accom-plished by any form of treatment. Naturally, the potency of the husband must be determined before the treatment of any form of sterility is instituted.

Sterility due to difficulty in intercourse, other conditions being right, is usually due to some sort of mechanical obstruction which may be easily removed by operation; e.g., imperforate or rigid

hymen, vaginal septa, etc.

Sterility in women associated with lack of sexual feeling may be overcome by frequent intercourse, particularly near the menstrual periods. If associated with expulsion of seminal fluid, the dorsal recumbent position with the buttocks raised for a time after coitus, will materially increase the chances of impregnation.

Abnormalities of the cervix which cause sterility are: (1) elongation of the vaginal portion of the cervix; (2) atresia of the cervical canal and small in-

ternal os.

In the first instance amputation, according to the method of Bonney, is the operation of choice, while in the latter 'conditions thorough dilatation, followed by simple curettage, gives very satisfactory results. The older operations of simply splitting the posterior lip of the cervix after thorough dilatation have grown obsolete for manifest reasons. Pozzi and Dudley have obviated the disadvantages of these operations by devising methods for covering the raw surfaces and preventing eversion of the cut

Where sterility is due to an abnormal condition of the endometrium, curettage, followed by the application of tincture of iodine to the inside of the uterus, certainly increases the prospects of concep-

tion.

In the type of sterility associated with pelvic tumors removal of these naturally increases the chances of pregnancy, provided such removal does not destroy the generative cycle. The breaking down of adhesions due to old pelvic inflammations often increases the chances of impregnation, particularly when the fallopian tubes are implicated.

Sterility caused by anteflexion may be treated by dilatation, followed by the introduction of a stem pessary. The stem is left in place for a week or ten days. In America the stem pessary is frequently left in the cervix for from one to three months. The Dudley operation is also highly recommended

for correcting anteflexion.

When sterility is due to retroversion and retroflexion, the uterus should be put in place and held. if possible, by some form of pessary. Failing in this, some one of the intra-abdominal methods of shortening the round ligaments should be used.

For sterility due to abnormal vaginal, cervical, or uterine secretions, proper diet, antiseptic vaginal douches, dilatation, and curettage, with the ap-

plication of a strong antiseptic to the cervical mucous membrane and glycerine tampon in the vagina, are recommended. When all methods of treatment have failed, the introduction of semen into the uterine cavity after the method of Hirsch may be tried. This method has proven successful in 6 out of 16 cases treated by Hirsch.

HARVEY B. MATTHEWS.

Rohleder, H.: Artificial Impregnation (Die künstliche Befruchtung). Wien. klin. Rundschau, 1914, xxviii, 319.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Rohleder believes that artificial impregnation is a measure that is justified therapeutically and need not offend the moral sense of either the practicing physician or the married couple. Married couples are justified in demanding this "last resort" after all other modes of overcoming sterility have failed, and the physician is justified in complying with their demand. Artificial impregnation may be indicated either because of impotentia cœundi or malformations of the penis on the part of the man; or because of stenosis of the os uteri, displacement of the uterus, or dyspareunia on the part of the woman. Its use is limited because it is only indicated when both of the couple have normal reproductive fluids but there is some mechanical hindrance to their union. Artificial impregnation may be intravaginal or intra-uterine. The author combines the two methods; he injects semen into the uterus and lays a tampon moistened with semen in front of the os. This method was successful in 6 out of 16 cases, 38 per cent; while in all the 65 cases reported up to 1910 about 30 per cent TORGGLER. were successful.

Sobotta, I.: Human Twins and Double Monsters from One Ovum, in the Light of the Most Recent Research in Mammalian Embryology Eineige Zwillinge und Doppelmissbildungen des Menschen im Lichte neuerer Forschungsergebnisse der Säugetierembryologie). Stud. z. Path. d. Entwickl., 1914, i, 394

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

From his latest study of the development of the eggs of armadillos that are as a rule polyembryonic, Sobotta believes that double formations in mammals are not the result of impregnation by two-tailed or two-headed spermatozoa, and are not caused by isolation of the two first blastomeres. Even if we presuppose, what is not yet thoroughly demonstrated, the total potency of the blastomeres, that is their capacity to form the foundation of the whole embryo, we would never get from such a separation twins from one ovum with a common chorion, since each blastomere would form not only an embryo but also the extra-embryonal membranes.

Sobotta's hypothesis attributes polyembryony in mammals to an isolation, at first latent, of the embryonic blastomere, which lies apart from the other blastomeres in the four-cell stage, and, in all species examined thus far, is distinguished by its large size. The three other blastomeres, according to Sobotta, give rise to the trophoblast. The only case of a twin mammal at this early stage is that of a sheep described by Assheton.

Sobotta hopes by his research to awaken the interest not only of embryologists but also of pathologists and gynecologists in this field of the history of development, which thus far has not been cleared up.

Weishaupt.

## Tivnen, R. J.: Blindness Caused by Ophthalmia Neonatorum. J. Am. M. Ass., 1914, lxiii, 1756. By Surg., Gynec. & Obst.

The part played by ophthalmia neonatorum in producing blindness is a sadly conspicuous and leading one. No writer can be charged with unseemly reiteration, no medical tongue accused of boresome repetition no matter how often or how insistently he dwells on this painful, humiliating truth; namely, that the vast majority of infants could have been spared their sad affliction if only the simplest elementary precautions had been observed at the

proper time.

A study of the statistics collected by different observers warrants the conclusion that one-eighth of blindness from all causes is due to this disease and one-fourth of the blindness among children is attributable to the same cause. Eight tables are given showing the prevalence of the disease here and abroad. In the schools for the blind 28.14 per cent of all new admissions in 1907 were victims of ophthalmia neonatorum. The activities of midwives have a great deal to do with this result, and they should be better instructed.

The economic side of the question is likewise a matter of considerable interest. It is estimated that it costs the state \$3,000 to educate a blind child. The proper equipment and maintenance of schools for the blind requires a considerable expenditure. To these sums may be added the loss to the individual in earning capacity, the curtailing of "avenues of opportunity," etc., which his affliction

necessarily entails.

The etiology, pathology, clinical course, and treatment are briefly touched upon. The Credé method of prophylactic treatment is highly recommended. If this method of prophylaxis were in universal use, it is certain that the proportion of cases of ophthalmia neonatorum would be greatly reduced; and if, in conjunction with the method, practical measures might be devised to insure the early recognition and treatment of the disease, it is not unreasonable to assert that such infections might be almost entirely eradicated.

A cursory study of the situation discloses many perplexing problems which only patience, perseverance, discretion, and coöperation may overcome. The plan proposed and carried out by the New York Association for the Blind is the one most likely to accomplish the largest measure of success.

EDWARD L. CORNELL.

Gaugele, K.: The So-Called Obstetrical Paralysis of the Arm (Über die sogenannte Entbindungslähmung des Armes). Ztschr. f. orthop. Chir., 1914, xxxiv, 511.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

On the basis of four cases of his own, the author comes to the conclusion that the so-called obstetrical paralysis is chiefly caused by injury to the capsule, which, on account of the pain on motion, leads to contracture with internal rotation. The injuries to the epiphysis are generally only complicating by-effects.

The treatment in recent cases is simple and successful. The arm is immediately fixed in abduction of 90 degrees and extreme outward rotation, and after a few days of daily dressing the muscles are to be strengthened by massage; after 3 or 4 weeks no more bandaging is done, the only treatment being massage. In older cases during the first year the treatment is about the same, and for the first decade marked improvement may be obtained by corrective bandages and gymnastics. In later life the internal rotation may be improved operatively by shortening of the pectoralis major (Helbing) or by osteotomy of the upper arm (Hoffa, Lange).

Vercesi, C.: Maternal and Fœtal Cholesterinæmia. (Colesterinemia materna e fetale). Folia gynec., 1914, ix, 81.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Pregnancy always causes an increase in the cholesterin content of the blood, an increase which is demonstrable in the first quarter, markedly increased in the second, and reaches its maximum toward the end of pregnancy. This increase in cholesterin is accomplished particularly by the adrenals, corpora lutea, placenta, and the mammary gland. The function of the hypercholesterinæmia is (1) an antitoxic one for the mother, a protective reaction against the toxemia of pregnancy, and (2) a nutritive one for the fœtus. cholesterin content of the fœtal blood is even lower than the average content in the blood of women who are not pregnant; the cholesterin of the fœtus is only partly of maternal origin, for the fœtus also can make cholesterin in its glands of internal secretion.

# GENITO-URINARY SURGERY

### KIDNEY AND URETER

Braasch, W. F.: The Clinical Diagnosis of Hydronephrosis. Interst. M. J., 1914, xxi, 1180.

By Surg., Gynec. & Obst.

Braasch discusses the clinical aspects of hydronephrosis from a diagnostic point of view. He deals especially with those cases arising from congenital causes, commonly called "intermittent hydronephrosis." These cases are generally seen in early adult life. The attacks of pain occur with more or less regularity and become more and more frequent, with freedom from pain between attacks. Usually

there are no urinary symptoms.

Objectively, tumor was noted in 32 per cent of 116 cases. Diagnosis is largely one of cystoscopic technique. The passage of the ureteral catheter may meet with obstruction, but generally not. Residual urine, pale and of low specific gravity, is always found in larger or smaller amounts. Overdistention of the renal pelvis with fluid to a point which causes renal colic is of considerable diagnostic value, especially in the hydronephrosis of moderate size. It is of more importance to know that this pain is unlike that from which the patient suffers than to know that it is identical with that pain. The amount of fluid is not a true index of the pelvic capacity owing (1) to the distensibility of the latter, (2) to the leakage of fluid from the pelvis into the ureter to an indeterminable extent.

Pyelography, i.e., rendering the outline of the renal pelvis opaque to the X-ray by means of an injected opaque solution (collargol), is a most valuable diagnostic measure. In hydronephrosis the outline of the pelvis presents a very definite appearance. It is seen to be enlarged, the papillæ are flattened, and the terminal irregularities of the normal minor calices are obliterated. These changes will vary considerably with the degree of hydronephrosis, being most marked in the more advanced cases. In certain early cases these changes may be determined only by comparing the pyelogram with that of the presumably normal opposite kidney. Pyelography will also show the angle of insertion of the ureter into the pelvis. Anomalous insertions together with pelvic changes, such as Braasch describes, are to be regarded as cause and effect. Hydronephroses of large size are generally demonstrated without resorting to pyelography. The ureteral catheter and X-ray not only demonstrate the presence of a hydronephrosis but also determine its cause in most cases. Strictures, kinks, or abnormally placed renal blood-vessels (61 per cent of the latter were found in 116 cases) may be shown to

exist. The method may serve also to eliminate the kidney as the offending organ.

Normally injected collargol will drain out of the renal pelvis in 24 hours. If traces of it are found after that time it is an evidence of renal retention.

Certain hydronephroses are of an "intrarenal" type, in that the pelvic distention lies entirely within the kidney; others rarely may contain bloody urine as a result of chronic pyelitis. Also "closed" hydronephroses are occasionally met with. In these cases the ureter is completely occluded, the urine may be normal, and there may be no symptons other than abdominal tumor for which the patient seeks relief. Such cases are frequently mistaken for tumor of other organs (gall-bladder, broad ligament, etc.).

In the series of 116 cases of hydronephrosis occurring at the Mayo Clinic, nephrectomy was done in 72 per cent, plastic operation on the pelvis in 13 per cent, and division of the ureter and nephrorrhaphy in 15 per cent. Plastic operation on a hydronephrosis of more than 5 or 6 oz. capacity is usually not successful; on those of smaller size a

restoration to normal may result in time.

J. DELLINGER BARNEY.

Legueu, F., Papin, E., and Verliac, H.: Anatomical Study of Renal Tuberculosis: Origin, Evolution, and Process of Healing (Étude anatomique de la tuberculose rénale: origine, évolution, processus de guérison). Arch. urol. clin. de Necker, 1914, i, 434. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The authors have revised some questions in regard to the pathological anatomy of kidney tuberculosis, basing their work on the examination of 97 tubercular kidneys, most of them secured by operation, and on the extensive literature.

Instead of classifying the different forms it is more important to follow the development of tuberculosis of the kidney. The views of the surgeons and the results of experimental work are not in harmony with regard to the primary localization of tuberculosis in the kidney, nor is the mode of infection absolutely proved. There are also defects in our knowledge of the method of dissemination of the tuberculosis in the kidney tissue and of the socalled spontaneous healing of kidney tuberculosis. The pre-ulcerous stage is only a beginning stage. There were no cortical lesions in two such kidneys which were examined, nor in another case of ulcerocaseous tuberculosis. The apices of the papillæ were affected in every case. The same hæmatogenous infection of a kidney causes the rapidly appearing disease of the apices of the papillæ and the more slowly developing involvement of the pyramids.

Dilatation of the kidney pelvis or calyx is not necessarily caused by stricture lower down, but may be the result of tubercular disease of the pelvis or calyx. The ureter of the sound kidney may be tubercular, and this fact may often be demonstrated by cystoscopic examination. The terminal stage may be in either one of two forms - the large, gibbous, tubercular kidney, which consists of a series of pus-filled chambers communicating with each other, and the pyonephrotic saccular kidney, which is practically a single pus sac. In only one case were there found healed tubercular changes without exclusion of the part of the kidney involved. The exclusion was sometimes brought about by calcification, sometimes by caseation, sometimes by fibrous obliteration. The caseation was doubtless the initial stage of the exclusion. Real and pseudocysts and partial hydronephroses can also be found in tubercular kidneys. The pseudocysts originate from old, obliterated cavities; their contents cannot be demonstrated in animal experiments to be pathological. A real kidney cyst may be spared by the tuberculosis which affects the kidney. Regressive changes were found in one-fourth of the tubercular kidneys examined, always in connection with florid lesions. The so-called putty kidney may also occur without the obliteration of the ureter. VON LICHTENBERG.

Tschaika, A. A.: Hæmorrhage after Nephrotomy; Its Prevention (Die Blutung nach Nephrotomien und ihre Bekämpfung). Deutsche Ztschr. f. Chir., 1914, cxxxii, 124. By Surg., Gynec. & Obst.

In recent years nephrotomy has been used in an increasing number of conditions, as it has been found to be a relatively harmless procedure. The chief danger is hæmorrhage, and much study has been devoted to the best incisions and methods of suture for preventing it. Tschaika describes a series of experiments on animals and dogs to test the latest method of controlling such hæmorrhage; viz., tamponing the kidney wound with fat from around the kidney. These experiments show that the fat tampon does not have any unfavorable effect on kidney excretion. They also show that the fat tampon has great advantages over the usual closure by suture. Kidney fat is the best, because it is found in the immediate neighborhood of the wound, it has good plastic properties, and seems to be particularly viable, perhaps because it very closely resembles embryonic tissue. The hæmostatic action of the fat tampon has also been confirmed by clinical work. The fat remains as living tissue and does not undergo necrosis.

Chevassu, M.: Progress in Urinary Surgery from the Use of Ambard's Constant (Les progrès dus à l'application de la constante d'Ambard en chirurgie urinaire). Paris mèd., 1914, iv, 555.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Ambard's constant with its square root at first looks rather formidable to the surgeon, but the clinician has nothing further to do but to take the urine and blood and send them to a chemist who reckons the constant. If the kidneys are normal the constant lies between 0.050 and 0.075, and is generally somewhere around 0.065. Values under 0.050 and over 0.075 indicate abnormal kidney function, but it must be borne in mind that Ambard's constant only reports the kidney function with regard to the excretion of nitrogen, and tells nothing of the excretion of water, which is to be tested by experimental polyuria. Of course the constant only shows the degree of disturbance in function, not the kind of disease.

There is a normal constant in all surgical kidney diseases, and this shows that the kidney tissue as a whole is capable of functioning. An abnormal constant shows that the sum total of non-diseased kidney tissue is not capable of compensating the loss of the other kidney after nephrectomy. author has never seen a case that has contradicted his assertion that with a normal constant there was unilateral kidney disease. Of course when it is possible the ureters will be catheterized, but in cases where this is not possible the constant triumphs. The constant 0.12, which indicates that the patient only retains a third of his urea function, shows that it is inadvisable to perform nephrectomy; but it must not be asserted that every patient with a constant of less than 0.12 on whom nephrectomy is performed recovers, and that every one with a constant higher than that dies, for the effect of a nephrectomy depends on several other factors. The author believes that only with an increase in the constant the chances of success decrease and that above a certain limit nephrectomy is dangerous. In conclusion, it may be said that the determination of Ambard's constant gives greater precision in the surgical examination of patients with kidney disease, and greater safety in the operation. It renders examination possible in patients that heretofore could not be examined, and renders operation possible in cases where it has hitherto been regarded as impossible. It also simplifies a number of the classical methods of examination. KOTZENBERG.

Lichtenberg, A. von: Technique of Pyelography (Zur Technik der Pyelographie). Zentralbi. f. Chir., 1914, xli, 1353. By Surg., Gynec. & Obst.

The author describes his technique as used in 1000 pyelographies. He employs ureteral catheters. No. 4 or 5, impregnated with bismuth or minium, The flow of urine is a relative index of the capacity of the pelvis of the kidneys. After testing the renal functions a Charrière catheter No. 17 is introduced into the bladder and the patient taken to the X-ray room. A warm 10 per cent solution of collargol is slowly injected through the ureteral catheters with a 20 ccm. record syringe without using force; when the patient has the slightest sensation in the same time the backflow of collargol is noted through the catheter in the bladder. If there is a continuous

backflow, even with very slow injection, the injection is kept up during the X-ray exposure, even in cases where only 3 to 5 ccm. collargol are sufficient to fill the renal pelvis. In large sacs 60 to 80 ccm. may be injected. In some cases injection of a few cubic centimeters of collargol brings on an attack of colic; even in large hydronephroses this may occur. In these cases there is no backflow of collargol, and the urine shortly after the examination is collargol free. After several hours black urine is passed. This stoppage of the urinary flow shown by pyelography is an absolute early symptom of a beginning hydronephrosis. The principal contra-indication to pyelography is hæmorrhage.

Buerger, L.: Primary Tuberculosis of the Pelvis of the Kidney. Interst. M. J., 1914, xxi, 1244.

By Surg., Gynec. & Obst.

A careful study of 50 tuberculous kidneys received in the department of surgical pathology of the Mt. Sinai Hospital, New York, during the last seven years showed that the most common type was that comprising primary involvement of the papillæ. In two specimens, which are fully described and illustrated in the article, the recesses between the calyx and papilla or the renal pelvis were found to be the primary and only seat of the tuberculous process. These observations, although few in number, Buerger believes strongly favor the assumption that in chronic renal tuberculosis the bacilli gain access to the tissues by a process of filtration from the blood into the urinary tubules. The angle between the papilla and calyx may afford a favorable nidus for the accumulation of bacteria, on the basis of stagnation and poor drainage at M. KROTOSZYNER. that point.

## BLADDER, URETHRA, AND PENIS

Hagner, F. R.: Neoplasms of the Bladder. N. Y. M. J., 1914, c, 804. By Surg., Gynec. & Obst.

Hagner believes that if the term "benign tumors of the bladder" was eradicated, it would be a great advantage because it gives too many men unfamiliar with them the impression that tumors of the bladder are clinically benign, whereas all tumors of the bladder are clinically malignant. Unless they are removed by some operative means, they will either directly or indirectly cause the death of the patient.

Papillomata, the most common type, that show no tendency to infiltrate the bladder wall and microscopically show no evidence of malignancy, are considered by some authorities as being benign growths. Cysts of the bladder, fibromata, and myomata are so rare as to require no more than

mention.

In benign tumors Hagner advises excision of the growth with the operating cystoscope followed by cauterization or high-frequency cauterization by the Oudin current according to the method of Beer.

He divides malignant tumors into sarcomata and

carcinomata, the latter being most common. As to frequency of malignant tumors of the bladder in relation to those in other parts of the body, some authors give 3.9 per cent, others as much as 7.6 per cent. There are two varieties: (1) primary and (2) secondary through metastasis from adjacent organs.

Persistent hæmaturia, pain—which is totally absent in some cases—and the finding of fragments of the tumor in the urine are given as symptoms of this condition, accompanied, naturally, with the usual train of symptoms seen with malignant growth

anywhere in the body.

Hagner has previously reported 4 cases operated upon for bladder carcinomata. To these he adds a new case. The surgical treatment is palliative and

radical.

Palliative treatment consists of (1) the Oudin current; (2) suprapubic cystotomy and removal of the growth without extirpation of the bladder wall, followed by cauterization; (3) suprapubic cystotomy for drainage only in inoperable cases; (4) double nephrotomy with ligation of the ureter or drainage in the flank by ureterostomy.

Radical treatment consists in (1) total extirpation of the bladder; (2) excision of the bladder wall with the tumor mass—when the base of the bladder is involved, this is best done by intraperitoneal opera-

tion.

The author describes an operation for tumors involving the fundus or lateral wall of the bladder as follows: The bladder is irrigated, and, if bleeding, adrenalin 1:10,000 is instilled and allowed to remain 5 minutes. The bladder is then distended with salt solution and a Nitze cystoscope introduced and held by an assistant while suprapubic incision is The bladder is exposed in the usual way. Hagner thought that at this stage it might be possible to illuminate the bladder with the cystoscope to outline the tumor mass by transmitted light. This he was able to do. The growth is then inspected through the cystoscope, the cystoscope being held by the left hand; with the right hand a threaded needle is pressed on the fundus of the bladder, and the dimpling caused thereby is readily seen through the cystoscope. The needle is first carried to the right and then to the left of the growth at a sufficient distance to give a margin of healthy tissue. A suture is also placed in the lower border of the field. The vesical wall is then incised around the inner side of three traction sutures, the portion of the wall to be removed being clamped as the incision advances. The bladder wall containing the growth is lifted up by a clamp and held by an assistant, the fluid left in the bladder is aspirated with a syringe, and the bladder cavity is packed with gauze. If the parietal peritoneum is to be removed (and he feels sure, if it is adherent to the bladder wall, that it should be), the incision in the bladder wall is then carried upward into the peritoneal cavity and the portion of the peritoneum covering the growth is removed. The bladder and peritoneal

wounds are then closed by two rows of chromic gut, a suprapulic drain being left in the bladder.

Of Hagner's eight cases of bladder malignancy, three have been operated upon by the above method without a death.

H. W. E. WALTHER.

Chute, A. L.: Cancer of the Bladder. Boston M. & S. J., 1914, clxxi, 745. By Surg., Gynec. & Obst.

Chute calls attention to the relatively small proportion of cures in cases of malignant disease of the bladder. When these cases are reviewed it is evident that the cases that remained without recurrence for a long time were not necessarily cases on which the most radical and careful operation had been done. The cure of a case appeared to depend largely upon whether the disease was still confined to the bladder; in cases where it was not it seemed necessary to do very extensive dissection of the lymphatics that took their origin in the bladder to prevent recurrence. In about one-third of the author's cases malignant disease began near the bladder outlet. In order to remove the disease locally it would probably be necessary to perform a total cystectomy as well as a dissection of the pelvic lymphatics.

Shoenenberger, F. J., and Schapira, S. W.: Application of Radium in the Bladder for Carcinoma; Report of Two Cases. J. Am. M. Ass., 1914, lxiii, 1852. By Surg., Gynec. & Obst.

In the first case, a patient suffering from hæmaturia, cystoscopy showed a tumor the size of an English walnut situated in the trigon, midway between its center and the opening of the left ureter. The tumor appeared to be friable. The right ureter was obstructed, with some urine escaping. Microscopic examination of a section of this metastatic growth proved to be carcinomatous. In the right inguinal region there was a mass the size of an orange which was hard and immovable, and ex-

tended down into the pelvis.

A tube containing 15 mg. of radium was attached to the lower end of a Freyer tube, which was introduced into the bladder after a suprapubic cystotomy and was brought in direct contact with the tumor and allowed to remain there for twelve hours. The same tube of radium after removal from the bladder was buried in an incision in the metastatic growth and allowed to remain in place for twelve hours. Recovery was uneventful, except for attacks of pyrexia beginning 48 hours after the operation, lasting for three days, and recurring at the end of a Three such attacks occurred. Cystoscopy two months after operation showed that the vesical tumor had entirely disappeared, and the mucous membrane of the bladder appeared normal. Both ureteral openings were obstructed. The patient died six months after operation from general asthenia and hydronephrosis due to obstruction of the ureters by metastatic growths in the pelvis.

In the second case the patient complained of frequency of urination day and night for 18 months;

for three months had had pain in the region of the bladder and perineum, and had lost 40 lb. in three months. Cystoscopy shows a large bleeding tumor slightly to the left of the left ureteral orifice; there was also a large eroded tumor at the site of the prostate. The tumor at the left ureteral opening was removed, and was found to be the size of an The smaller tumor on the right side was also removed. A V-shaped section was removed from the prostatic tumor, thus providing better drainage through the urethra. The same procedure in the use of radium was used as in the first case. bladder was closed in three weeks. Pyrexia occurred as in the previous case. The patient gained 26 lb. in two months. Cystoscopy three months later showed the bladder mucosa apparently normal. The surfaces from which the tumors had been removed appeared as small pale depressed areas. Rectal examination showed the prostate greatly diminished in size and of normal consistency. There were three ounces of residual urine. H. A. KRAUS.

Englander, S.: A Review of Posterior Urethroscopy.

Urol. & Cutan. Rev., 1914, xviii, 580.

By Surg., Gynec. & Obst.

There has been a great advance in the knowledge of the normal and pathological anatomy of the urethra since the invention of the irrigating and the

air-inflating urethroscope.

In the normal urethra there may be located through the urethroscope the sphincter, the prostate, the openings of the ejaculatory ducts, the verumontanum, the utriculus masculinus, and the pars menbranacea. Normally, the orifices of the ducts are not visible, but when inflamed they may appear as dark red slits, or dots, with protruding mouths.

In the pathological urethra there may be located through the urethroscope a swollen highly reddened mucous membrane, infiltrations, granulations, papillomata, a large and congested colliculus, polypi,

cysts, scar tissue, ulcers, and tumors.

It is particularly in cases where the pathological area is of limited extent that posterior endoscopy is of great value and where local application of concentrated silver or tincture of iodine to granulations or to swollen and ædematous colliculus or to ulcers produce excellent results, or where the cautery is applied to these same conditions or to scar tissues or pathological bands or adhesions that may be present, or to median lobe obstruction or in the application of the curette to polypoid masses about the sphincter or wherever they may be.

Geraghty described a case in which a gonorrhœal discharge persisted until treatment of the utriculus cleared it up. Underhill recently described a case in which the urethroscope showed several cystic bodies near the internal sphincter. The patient suffered from a gleety discharge and fleeting erections, also from pollutions. Under appropriate treatment and cauterization of these bodies the patient improved. Walsh described two very interesting cases revealed by posterior endoscopy. In

the first case the verumontanum instead of being an elevation was found divulsed into two unequal parts; in the second case the ejaculatory ducts seemed to be at either end of a band of divulsed scar tissue. Both cases recovered under appropriate treatment.

The author reports a number of cases of chronic posterior urethritis and sexual disorders in which location of the lesions was made possible by posterior endoscopy, and treatment was applied directly with THEO. DROZDOWITZ. good results.

#### GENITAL ORGANS

Cutan. Rev., 1914, xviii, 602.

By Surg., Gynec. & Obst.

Hawkins' first case, a man, aged twenty years, had been struck by a locomotive and suffered severe injuries to the pelvis and bony girdle. Examination showed that the left testicle had been displaced upward with associated rupture of the fibers of Pouparts' ligament. The testicle was replaced into the scrotum and fixed there. Recovery followed.

The second case was a boy of eleven years, who had been struck by a trolley car and thrown against the curb. On examination a lacerated wound was found over the penis, only the skin being left. The body of the penis was found in a wound over the pubes, its dermal covering torn loose at the corona. The right testicle was in the inguinal canal. The canal was opened and the testicle replaced into the scrotum. J. S. EISENSTAEDT.

Pedersen, V. C.: Teratoma Testis with Tubercle N. Y. M. J., 1914, c, 1001. By Surg., Gynec. & Obst. Bacilli in the Urine.

Pedersen adds one more case to the list of tumors of the testicle which a pathological examination showed to be of a complex structure.

In addition to tumors of the testicle he also found tubercle bacilli in the urine, and on the theory that the case was tuberculous, castration was done, the cord pulled out as far as possible, and the ends cauterized. The patient is still in good health.

On examination of the specimen, the author found a node in the testicle proper and not in the epididymis; no infiltrations were found in the epididymis or vas. The neoplasm consisted of an outer whitish mass containing a cavity of serous fluid and a brownish or blackish central mass of prominence and great hardness. The author made a probable diagnosis of teratoma of the testicle and the case was then referred to Prof. Ewing, who reported that on section the tumor was composed chiefly of fibromuscular tissue containing many small cavities lined by cylindrical epithelium probably representing ectoderm; however, no traces of ectoderm were seen. The tumor was adult in type and relatively benign, and the prognosis was good. Pedersen says he will report further on the case. A. C. STOKES.

Lespinasse, V. D.: The Relief of Sterility by Means of Permanent Epididymostomy, with the Formation of an Artificial Sac for the Storage of the Sperm. J. Am. M. Ass., 1914, lxiii, 1916. By Surg., Gynec. & Obst.

This operation is designed to cure cases of male sterility due to inoperable closures of the vas deferens and ejaculatory duct. The operation consists of making a non-absorptive sac by lining a portion of the tunica vaginalis testis with Thiersch grafts. A fistula is established from the head of the epididymus into this sac. This fistula may be established by simply cutting off the tops of the epididymal tubules or by threading a hair into the lumen of the epididymus tubes and letting it cut out.

The sac then fills with spermatozoa: whenever desired this sac can be tapped and the spermatozoa withdrawn into a syringe and injected into the uterus.

Binney, H.: Cancer of the Prostate. Boston M. & S. J., 1914, clxxi, 748. By Surg., Gynec. & Obst.

The recent development of prostatic surgery has brought out the fact that carcinoma of the prostate is more common than formerly believed. While Albarran in 1900 stated that cancer occurred in 14 per cent of all cases of prostatic enlargement, Young in 1913 reported 28 per cent in 100 cases. Other authors report lower percentages, and it is probable that the proportion is from 15 to 20 per cent of all cases.

The best description of the development of carcinoma is given by Young and Geraghty, according to whom the process starts beneath the posterior capsule, and sooner or later invades the lymphatics about the ejaculatory ducts, passing upward be-neath the trigone and into the space between the seminal vesicles; thence it invades the pelvic lymphatics, iliac glands, etc., and may form metastases in a variety of locations. While the gross appearance is characteristic, sometimes the use of the microscope is necessary for diagnosis.

Symptoms in the first stage, when the growth is wholly within the prostatic capsule may be slight, amounting to a slight frequency or local pain. Later, with involvement of the capsule and the prostatic nerves, reflex pains arise which should arouse suspicion of the trouble. In the third stage the urinary symptoms of obstruction plus the effects of metastases in some part of the body will be present.

The only hope of cure lies in the early recognition of the disease in its first stage unless Young's radical operation is done, which is always followed by permanent incontinence. If the disease has not broken through the prostatic capsule, conservative operation offers hope of cure.

The diagnosis is made by rectal touch, in some

cases with the aid of the cystoscope.

Differential diagnosis from other conditions is usually easy, but occasionally prostatic calculi can be distinguished only by the X-ray.

A case is reported in which the diagnosis was made early, a perineal operation performed, and at the end of five years the patient is still in good health.

Operation in the second and third stages may be indicated for the removal of the obstruction or for suprapubic drainage of the bladder. The reported results of the use of radium are not yet convincing as to its efficacy in prostatic carcinoma.

## Lanphear, E.: Prostatectomy under Local Anæsthesia. Urol. & Cutan. Rev., 1914, xviii, 603. By Surg., Gynec. & Obst.

Lanphear reports very satisfactory results in prostatectomy under local anæsthesia. Three hours before operation the patient receives hypodermatically 0.25 gr. morphine and .01 gr. hyoscine This is repeated one and one-half hydrobromide. hours before operation. The deep parts are infiltrated with one per cent urea and quinine hydrochloride which has been boiled for twenty minutes. This treatment is repeated one-half hour before operation, then the superficial injection of one dram of 1 per cent solution of novocaine is made directly under the skin. Lanphear states that besides avoiding the untoward effects and complications of ether or chloroform narcosis, this method affords less post-operative pain and brings convalescence J. S. EISENSTAEDT. far quicker.

## MISCELLANEOUS

Murphy, J. B., and Kreuscher, P. H.: Vaccine Treatment of Diseases of the Genito-Urinary Tract and Their Sequelæ. *Interst. M. J.*, 1914, xxi, 1214. By Surg., Gynec. & Obst.

The authors state that the general indications for the use of vaccine in urinary infections are cases without obstruction to urinary or pus drainage. Their technique is as follows:

Enough culture tubes, from 10 to 15 as a rule, and three bouillon flasks are inoculated and the vaccine made from the mixed first growth on these tubes.

For urethral inoculations a very short urethroscope is passed into the urethra; for growths from prostatic infection the prostate is expressed, a catheter or tube is passed into the urethra, and the material taken through the tube, or the patient urinates into a glass through the tube and the inoculation is made from this urine.

In some cases the patient's own blood is mixed with the medium, the idea being that the organisms will grow better on this medium than on blood from some other individual. The usual dose is around 100 million repeated at from 3- to 8-day intervals.

In the acute infections vaccines are recommended as adjuncts to surgery. In the chronic cases the vaccines are of great value. Success with them depends upon (1) the ability to isolate the germ; (2) the virulence of the infection; (3) the localization

of the disease; (4) the individual response of the patient to the treatment; and (5) the origin of the infection.

The cases treated are of two types: (1) Local infection of the kidney, bladder, and urethra; (2) metastatic infections in the bones, joints, and distant organs. The results in the local infection have been good, but in the metastatic cases it has been found very difficult to obtain a vaccine.

The authors recommend that the blood picture be watched in all cases under vaccine therapy, and they also recommend that vaccine be used intravenously. They state that two organisms may be present in the original infection. After the first lot of vaccines has been used, smears made will show that one of these organisms has almost if not entirely disappeared. If not, a new inoculation is made.

Their conclusions are as follows:

r. Autogenous vaccines should be used in all cases when it is possible to obtain them, but there are cases in which there is a positive indication for combined vaccines.

2. Vaccines have failed in many instances because of the almost insurmountable difficulties in obtaining the proper organism from the genitourinary tract and from insufficient drainage.

3. Vaccine must not be expected to reconstruct tissues, organs, or joints that have been destroyed by known or unknown pathogenic organisms. If they are to be effective and prove prophylactic against such destruction, they must be timely and intelligently administered.

4. Vaccine should always be used, but up to the present time there is no justification in neglecting other known methods of combatting infections of the genito-urinary tract and their sequelæ.

V. D. LESPINASSE.

## Williams, W. W.: The Gonococcus Complement-Fixation Test. Interst. M. J., 1914, xxi, 1198. By Surg., Gynec. & Obst.

The author gives a clear description of his technique in performing the complement-fixation test. He uses a polyvalent antigen made up of 28 different strains of gonococci. This he found to be slightly more sensitive than the antigens put up by commercial houses. He cites a number of cases in which the test was of distinct value, and concludes that the test is absolutely specific for the gonococcus, and that a positive reaction is always reliable and an indication of a gonorrheal infection somewhere in the body, unless the individual from whom the serum was obtained has had gonococcus vaccine treatment, or has recently recovered from an infection by that organism.

The chief value of the test is in those cases with chronic or ill-defined affections, where it is not usually feasible to obtain the organism in smears or cultures, and in the diagnosis of gonococcus arthritis, in which it gives about 100 per cent positive reactions.

George G, Smith,

## SURGERY OF THE EYE AND EAR

EYE

Faith, T.: The Prognosis in Squint. Illinois M. J., 1914, xxvi, 530. By Surg., Gynec. & Obst.

The treatment and outcome of concomitant squint from the standpoint of visual acuity of the squinting eye, binocular single vision, and parallelism are discussed. The common practice of refraction, watchful waiting, and then, if there is no improvement, operation, is the fault of the oph-

thalmologist.

According to the author, lessening, accomodative efforts, arousing instinct for precise vision and the desire for binocular vision is the proper early treatment; after refraction, holding the fixing eye under the influence of atropin and compelling the use of the squinting eye. Along with this method, many painstaking schemes are used to develop the more or less amblyopic retina in the squinting eye. Following the coarser objects the amblyoscope is used. If the above results are not satisfactory the only change made is to remove the lens or substitute a weaker one in front of the fixing eye. The author emphasizes the latter treatment in faulty cases where other treatment has failed.

Amblyopic exercises are a waste of time until the squinting eye has gained some in visual acuity. Amblyopia transferred to the fixing eye from the squinting eye is a good omen, the author believes. He takes issue with Worth on the continued use of atropin in both eyes with or without correction and

says that little harm can come from it.

Cases of under 4 years' duration offer the best prognosis if there is no outward limitation, and even cases of 4 to 6 years' standing, except that they take longer. Even in cases of longer standing results have been obtained by perseverant treat-

The least successful cases are those that persist in having eccentric fixation in the squinting eye, cases that are originally paralytic transformed to concomitant, and anisometropic cases in which the difference in refraction amounts to 3 to 4 diopters. Cases of alternating squint never get ideal results, although occasionally alternating SYDNEY WALKER, JR. ones do.

Ray, V.: The Extraction of Steel and Iron Particles from the Eye by the Electro-Magnet. Lancet-By Surg., Gynec. & Obst. Clin., 1914, cxii, 479.

From his results obtained by experiments on fresh pigs' eyes Ray has practically abandoned the use of the giant magnet in favor of a hand magnet of the Hirschberg type for the removal of magnetizable particles. With an exact X-ray localization, as by the Sweet method, the operator is enabled to make an incision large enough to admit the tip almost over, or in the immediate vicinity of, the foreign body. The author claims that to successfully dislodge a metallic particle it is not necessary to insert the tip into the vitreous in at least two-thirds of the cases.

This method has been employed in 100 cases or more without infection or detachment of the retina and with the advantage of no further possible injury to the delicate and vulnerable tissues of the anterior G. D. THEOBALD.

segment.

Noble, W. L.: The Advantages and Disadvantages of the Intracapsular Cataract Operation, as Practiced by Colonel Henry Smith of India. Illinois M. J., 1914, xxvi, 487.

By Surg., Gynec. & Obst.

The different steps of the technique are described and each one is criticized separately. From Noble's viewpoint the whole procedure is a disadvantage, except the preparation of the patient, which consists in obliteration of the upper fornix by sliding the brow upward, and, after lifting the lid with a speculum, a very thorough flushing of the sac is possible. As regards the corneal section, the advisability of grasping the conjunctiva at the limbus rather than at the attachment of a tendon is questioned; further, the start of the incision is a good one, but it has been in use for 25 years and is not original.

Issue is taken as regards this section being at right angles to the corneal surface, as there is no section that can be at right angles; the one that approaches it nearest is the one that is closest to the limbus. Smith's leaves the limbus immediately,

hence could not be included.

The author thinks that Smith's contention that the presence of capsule and cortical substance in the eye is usually followed by iridocyclitis is not well taken, as this would imply that in the Smith

operation there is no iridocyclitis.

Both the technique and some of the results of the iridectomy are criticized very strongly, not only on account of the colobomas resulting but also on account of the trauma to the epithelium of the cornea produced by the outer blade of the forceps. Smith's fear of rupturing the capsule is given as the excuse for the unique procedure of putting one blade of the iris forceps in the anterior chamber and the other one outside.

The expression of the lens is good, but the force used is beyond that used in the ordinary operation.

To refute the claim that the Smith operation is free from "secondaries" and iridocyclitis, histories from operated cases by three men are quoted; the results, if correct, certainly do refute it in a small measure.

Sydney Walker, Jr.

Snell, A. C.: A Case of Extensive Accidental Corneal Splitting. Arch. Ophth., 1914, xliii, 620.
By Surg., Gynec. & Obst.

Snell replaced a torn corneal flap, 3 mm. wide and 0.5 mm. in thickness, extending from limbus to limbus, after cleansing same with boric solution. He placed a single suture through to the apex of the torn flap, adjacent corneoscleral tissue, and conjunctiva. By the fifth day, the reunited flap, with edges elevated, had swollen and turned bluish gray, blood-vessels having formed at the apex and in the corneal area to the extent of 3 mm. At the end of the second week a cilium, vertical, with root directed upward was discovered in the anterior chamber. The pupil was slightly oval horizontally, the lens cataractous above, with a crescentic area in the lower quadrant of the pupil remaining clear. In less than three months the blood-vessels had disappeared with one exception, visible by loupe; dense haziness at the upper end of the flap had cleared, leaving the cornea smooth and flat, with normal appearance, excepting for an opaque area in the center of the flap. The lens was clear below, the cataract being limited to the upper anterior half. The vision was 20/200. C. A. MAGHY.

McReynolds, J. O.: Some of the Newer Operations for Glaucoma. Texas St. J. Med., 1914, x, 279. By Surg., Gynec. & Obst.

In a discussion of the various operations for glaucoma, credit is given to a number of men among whom are Smith, Lagrange, and Elliot, the latter's

operation being discussed in detail.

The author describes his corneal wedge for splitting the cornea, which has been adopted by Elliot. It is in the form of an angular keratome. He has also devised a conjunctival forceps for controlling the flap. Other trephines are discussed, but he thinks Elliot's is the nearest to perfection.

Corneosclerotomy with the aid of a thread and knife, also the method of substituting a sharp hook

for the thread, are discussed.

Strong emphasis is laid on the post-operative dangers of sympathetic ophthalmia following operations about the ciliary body; and a large number of these cases are forecasted for the future following the most approved operations.

SYDNEY WALKER, JR.

Burleson, J. H.: Some Clinical Observations Regarding the Etiology of Glaucoma. Texas St. J. Med., 1914, x, 281. By Surg., Gynec. & Obst.

Some new etiologic factors of glaucoma are brought up, among which are pelvic disorders, chronic urethritis, and choretic conditions. From the limited number of cases, however, the author admits that he cannot hold them as positive factors at this time.

Sydney Walker, Jr.

Gradle, H. S.: The Treatment and Indications for Operation in Glaucoma Simplex. Wis. M. J., 1914, xiii, 224. By Surg., Gynec. & Obst.

The author frankly states that the cause of glaucoma simplex is still unknown; he is unwilling to accept the theory of a close relationship between intra-ocular tension and blood-pressure.

The influence of massage upon the glaucomatous eye is discussed at length and its prognostic value in the disease is mentioned. The value of the therapeutic measures employed is to be judged from three standpoints: (1) the curve of intraocular pressure, tonometrically registered; (2) the patency of the intra-ocular outlets, measured by the intra-ocular tension before and after three minutes' massage of the eyeball; and (3) the visual fields.

The therapeutic attacks are divided into three periods: two weeks of intensive treatment, to be carried out in the hospital; two weeks of moderate treatment; and two weeks of minimum treatment, consisting in the local instillation of pilocarpine every other day and a return to the former mode of life. The three prognostic factors must be carefully watched and the ultimate treatment decided upon by their behavior during these periods.

In case operative interference becomes necessary, the author advocates the operation of cyclodialysis. If unsuccessful, the same operation may be repeated without harm to the patient. Sclerotomy, of which type of operation trephining is the best known, should be reserved as an operation of last resort, because of the dangers of late infection.

The author divides operations aimed at glaucoma simplex into three types: (1) those opening the normal intra-ocular outlets, as iridectomy is supposed to open the canal of Schlemm; (2) those opening new intra-ocular outlets, as the cyclodialysis opens a path to the suprachorioidal spaces; and (3) those opening extra-ocular outlets, as trephining. The last class is a dangerous type of operation and should be used only as a last resort.

Medalia, L. S.: Vaccine Therapy in Eye Diseases of Bacterial Origin. Boston M. & S. J., 1914, clxxi, 621. By Surg., Gynec. & Obst.

Medalia gives a brief résumé of the literature to date and adds his personal observations covering a period of seven years. The cases treated by him are grouped according to the clinical diagnosis. He gives the details of 95 cases treated, the bacteriological findings and results. His conclusions are:

1. Vaccines will yield results such as could not be expected from the ordinary methods of treatment.

2. Autogenous preparations should be used, if possible, before permanent damage to the tissues occur.

3. Repeated paracentesis is a valuable adjunct in cases of hypopyon keratitis; small and oft-repeated doses yield better results than large doses; as a prophylactic measure the value of vaccines is recognized.

G. D. Theobald.

Fergus, F.: An Easy Method of Enucleation. Arch. Ophth., 1914, xliii, 618.

By Surg., Gynec. & Obst.

Fergus divides the conjunctiva over the external rectus exposing the same. The muscle is divided with blunt strabismus scissors, leaving a portion of the tendon attached to the sclera. The attached tendon is seized with conjunctival forceps and the eye is rotated toward the inner canthus when the nerve is severed. The orbital tissue is then resected close to the sclera and the remaining muscles divided, avoiding pressure on the globe. The wound is closed with or without a gold ball, or with or without sutures.

In contradistinction to Arlt's method, the operator stands on the same side as the eye to be enucleated: he always divides the external rectus first and immediately afterward the nerve, continuing rotation toward the inner canthus, thus leaving a long nerve attached to the eyeball. C. A. MAGHY.

Flemming: Radium and Mesothorium in Ophthalmology (Radium und Mesothorium in der Ophthalmologie). Strahlentherap., 1914, iv, 861.
By Surg., Gynec. & Obst.

Flat carriers were used, one of which contained a few milligrams of radium, the other a little more mesothorium. The results of biological tests with different methods of filtration are given.

Irradiation of the rabbit's eye for from a few to many hours caused keratitic changes and contraction of the pupil and changes in the skin of the lid that required some weeks for recovery. Experimental injuries of the rabbit's eye with and without infection were quickly healed.

Experimental tuberculosis of the eye could be influenced only when the irradiation was given immediately after the infection. An emulsion of tubercle bacilli was effected by the rays, 168 milligram-hours being absolutely bactericidal, but exposure to the sun's rays was more effective.

In the normal human eye irradiations of a degree that would cause considerable injury to the skin did not produce any changes except contraction of the pupil, and here as in rabbits the iris was particularly sensitive. In diseases of the eyeball results were obtained only in flaccid ulcers; the lens and the eyeground were very insensitive to the rays. The conjunctiva is less sensitive than the skin, but may be injured by too prolonged irradiation. Trachoma is no more favorably affected than by the older methods. Good results were obtained in xanthelasma and in tumors; also in angiomata, cancroids, and in sarcomatous tumors. A. Goss.

## EAR

Harris, T. J.: Report on the Recent Developments in Otology. N. Y. St. J. Med., 1914, xiv, By Surg., Gynec. & Obst.

The following subjects are reviewed by the author: (1) Treatment of chronic affections of the ear

by use of dry heat; (2) Reëducation of the deaf; (3) Otosclerosis; (4) The streptococcus mucosus; (5) Vaccine in the treatment of suppurative affections of the ear; (6) Indications for operation in labyrinthine disease; (7) Brain abscess; (8) Otitic meningitis; and (9) The symptom-complex of

r. Maljutin is quoted as stating that marked benefit has been obtained from treating the following conditions with dry heat; viz., (1) different forms of exudative otitis where ordinary treatment does not remove the exudate in the middle ear; (2) adhesive catarrh; (3) different diseases of a rheumatic or gouty nature involving the bony articulations in the ear; (4) otosclerosis in its beginning stage; and (5) syphilitic affections of the sound

receptive apparatus.

- 2. In discussing the reëducation of the deaf, the work of Maurice is referred to. While there is no claim made of restoring hearing where total deafness exists, the principle involved is the same as cultivating the sense of touch in the blind. For this purpose Maurice has devised an instrument which he calls the kinesiphone. It is an electric apparatus producing from 100 to 4,000 vibrations per second, the object being to produce a pronounced massage of the ear. In the sponsor's own words "It mobilizes in a physiological manner the organ of hearing; it stimulates the auditory receptivity of the deaf; it excites the labyrinth in which the nerve-fibers have become sclerosed and atrophied; the sonorous massage produces a vasodilatation which is decidedly marked; and the vibration stimulates the ciliated cells in the organ of Corti."
- 3. Citelli believes otosclerosis to be a vascular osteoporosis of the labyrinthine capsule, but does not think that any one condition causes this change; rather is he inclined to the view that a number of conditions produce it; viz., syphilis, osteomalacia, rickets, tuberculosis, different dyscrasias of uric acid origin, and diseases of the endocranial glands, especially of the hypophyseal system. His pathological classification is as follows: (1) those cases in which there is only an ankylosis of the stapes; (2) cases with bony fixation of the stapes and other foci of the spongifying process in the labyrinth, associated with an atrophy of the labyrinthine membrane; (3) an intermediary group where there are multiple disseminated foci without any ankylosis of the stapes, showing particularly involvement of the cochlea. While treatment is unsatisfactory, Citelli has benefited the tinnitus by the administration of extract of hypophysis in tablet form.

4. As a result of his studies of 21 cases in which streptococcus mucosus was found in aural discharge, Zemann agrees that mucosus suppurations are apt to lead to mastoid and endocranial operations, but he feels that the prognosis can be pronounced favorable when it is possible at an early date to eliminate altogether the foci of suppuration.

5. In regard to the use of vaccine in the treat-

ment of suppurative affections of the ear, reference is made to Haskin's report of having stopped the discharge in 25 out of 33 cases of chronic purulent otitis media treated, but as the time limit of two years has not elapsed since the apparent cure, he does not pronounce a definite result.

6. Indications for operation in labyrinthine dis-

ease as set down by Leidler, are as follows:

(a) Every diseased labyrinth dependent upon a purulent otitis, whether acute or chronic, combined with a labyrinthogenous intercranial complication, must be operated upon at once. Of these complications the lightest form is represented by a persistent headache on the side of the affected ear.

(b) Every labyrinth which shows involvement as a result of an acute or chronic otitis with symptoms of acute diffuse labyrinthine suppuration, advanced nystagmus of the third degree toward the healthy side, and lack of response to the turning test, must be operated upon at once if the temperature is more than 38° C. or the symptoms do not

abate within four days.

(c) A labyrinth which as the result of an acute or chronic otitis is completely destroyed functionally, and does not comply with the indications just given, must at once be operated upon in connection with the radical opening of the antrum, in case a spot in the bony capsule shows a pathologic opening into the peri- or endolymphatic space (fistula, cholesteatoma, sequestra, tumor, etc.) or where there are persistent symptoms of irritation of the labyrinth, such as dizziness, nystagmus, or vomiting.

7. On the subject of brain abscess a paper of Sharpe's is referred to, particularly that part warning against the danger of a blind hunting for the abscess with the needle, and the other suggestion relative to performing the operation for decompression

while waiting for the abscess to localize.

8. Preysing, Uffenorde, and Brieger's works on

the subject of meningitis are cited.

Preysing gives the following indications for treatment: (a) In meningitis following acute otitis, lumbar puncture, or, according to the circumstances, lumbar drainage. The dura should not be opened.

(b) In meningitis following chronic otitis without labyrinthine complications, or with labyrinthine irritation symptoms, the radical operation should be performed and the channel of infection most carefully removed. If the brain is found to be healthy in every particular, treatment is to be the same as for meningitis following acute cases, which are treated by lumbar drainage.

(c) In chronic cases where an extradural abscess is found and the symptoms do not disappear after emptying it, if the dura in the vicinity appears necrotic, or in a wider course, granulation should not be done; but it is warrantable to incise the dura and

seek for subdural necrosis.

(d) In chronic otitis existing with clear labyrinthine symptoms, the radical operation is to be made, and where there is a fistula, resection of the inner ear is to be carried out. If dural changes are then discovered, according to Wittmaack and Stacke. the dura and the posterior fossa in the direction of the internal auditory canal are to be opened as far back as the sinus and drained. Whether an otherwise entirely healthy dura is to be opened, or further operation performed, will depend upon the result of the operation on the temporal bone.

(e) If in the radical operation for chronic otitis with meningeal symptoms there is found a distinct dural fistula with drainage of pus, a thorough broad opening in the temporal bone is to be advised and

the diseased dura resected and drained.

Uffenorde and Brieger agree with Preysing that the present stage of our knowledge warrants only the cleaning out of the original focus of the disease and then repeated lumbar puncture. None of the authors are enthusiastic over drainage by incision into the dura.

9. The symptom-complex described by Barany and which he regards as characteristic of increased pressure in the cysterna pontus lateralis (the cysterna of the cerebello-pontine angle) is as follows: (1) dizziness; (2) tinnitus; (3) difficulty in hearing, suggestive of disease of the inner ear, often false notes on the diseased side, beginning directly back of the ear and radiating to the occiput and also forward; (4) tenderness directly behind the mastoid over the exit of the emissary vein; and (5) outward deviation of the hand on the diseased side.

Отто М. Rотт.

## Wrigley, F. G.: A Case of Temporasphenoidal Abscess Following Chronic Middle Ear Suppuration. Med. Chron., Manchester, 1914, lx, 10. By Surg., Gynec. & Obst.

The author reports the case of a girl of sixteen years with a history of copious foul discharge from the right ear for seven years following scarlet fever, and headache confined to the right temporal region. At radical mastoid operation a loose necrotic plate of bone was detached from the roof of the antrum, thus exposing the dura of the middle fossa; no sign of intracranial tension was observed.

After operation the headache and copious discharge continued; the mental state was normal: there was no ptosis, nystagmus, or optic neuritis; the reflexes were normal; as pus was observed issuing through the opening in the roof of the antrum, a

temperosphenoidal abscess was diagnosed.

The abscess was evacuated and recovery was uneventful except that at two dressings two or three drams of cerebrospinal fluid escaped from the drainage tube, probably from the lateral ventricle.

ELLEN J. PATTERSON.

# SURGERY OF THE NOSE, THROAT, AND MOUTH

#### NOSE

Babbitt, J. A.: The Reconstruction of the Nasal Septum after the Submucous Operation. J. Am. M. Ass., 1914, lxiii, 1822.

By Surg., Gynec. & Obst.

A submucous resection properly and completely done with the removal of bulging extremities of nasal tubercles, ridge, and vomer; removal of all posterior pressure, leaving a superior margin of cartilage and bone to support the flexible nose and prevent drooping, will reconstruct a new fibrous, perfect functional septum even in its vasomotor relations.

Perforations must be avoided and undue pressure with pads and splints, as areas in which mucous tissues are lost and replaced by squamous epithelium will probably crust, allow occasional intermittent hæmorrhage, and irritate the nose.

ELLEN J. PATTERSON.

Skillern, R. H.: Preturbinal Operation on the Maxillary Sinus. Laryngoscope, 1914, xxiv, 901. By Surg., Gynec. & Obst.

The author claims as advantages for his method of operating that the sinus can be inspected directly and local applications made under vision to any diseased areas which have proved resistant to treatment; drainage is at the lowest point reached through the nose; the turbinate remains uninjured; the operation is painless and the period of healing shortened.

After cleansing the nasal cavities, anæsthesia is secured by the application of a 20 per cent solution of cocaine and by injections of novocaine and adrenalin. A spindle-shaped piece of mucous membrane is removed in front of the inferior turbinate by two incisions extending through all the tissues to the bone, and the crista pyriformis is exposed. With a chisel, forceps and an electric trephine the antrum is then opened, flushed out, inspected, curetted, and packed loosely with iodoform gauze. The gauze is removed in fortyeight to seventy-two hours and replaced every second day for two weeks. Ellen J. Patterson.

Beck, J. C.: Chronic Focal Infection of the Nose, Throat, Mouth, and Ear. J. Am. M. Ass., 1914, lxiii, 1636. By Surg., Gynec. & Obst.

The author groups the most frequent sites of chronic focal infection as follows:

1. Recessions or terminal pockets: meibomian glands, lachrymal glands, nasal accessory sinuses

and mastoid cells; tonsils and adenoids; salivary glands and ducts; pulmonary alveoli and bronchi; gall-bladder and ducts; pancreas and ducts; appendix; uterus and fallopian tubes; prostate and seminal vesicles; pelvis of the kidney, ureter, bladder, and urethra; skin glands, as sweat and sebaceous; and mucous glands.

2. Tubular structures or ducts: gastro-intestinal

tract; and tear duct.

3. Glandular or parenchymal tissue: lymphatic glands; compound lymph-glands, as Peyer's patches, lingual tonsil; liver, pancreas, spleen, muscles; ductless glands, as thyroid, adrenals, thymus, and hypophysis.

4. Endovascular tissue: endocardium and intimas of the arteries and veins; and lymph-vessels

and lymph-spaces.

5. Serous membranes: peritoneum; pleura; pericardium; synovia; perineurium; and dura.

6. Pathologic tissue: cavities in teeth; alveolar or apical necroses, and death of pulp, with or without alveolar fistulæ; recession of gums, as pyorrhæa; abscess or necrosis elsewhere in the body; infection about the nails and hair follicles.

The following formula is laid down as to the

degree of chronic focal infection:

	Per cent
From tonsils	20
From gastro-intestinal tract	10
From appendix	10
From gall-bladder and other recesses	10
Total degree of infection	
Resistance	50

Using the above formula as a basis of comparison, the author tells of the restoration of normal health, and resistance made possible by tonsillectomy; viz., removal of the chronic tonsillar infection by complete tonsillectomy will leave only about 30 per cent of chronic focal infection. This remainder will be rapidly eliminated by the addition of autogenous vaccines and other medicinal, hygienic, and dietetic measures. In other words, by removing a definite focal point of chronic infection—the tonsils—the resistance and healing power of the patient is given opportunity to recuperate, and the individual is thus enabled to destroy other focal points of chronic infection and put the system in a condition to ward off acute attacks.

The reason for removing the tonsils in preference to any other structure is that with properly carried out technique there is less danger and inconvenience to the patient, without losing or inter-

fering with some functioning structure.

Отто М. Котт.

### THROAT

Shambaugh, G. E.: The Recognition of Chronically Infected Faucial Tonsils. Illinois M. J., By Surg., Gynec. & Obst. 1014, XXVI, 526.

Many patients suffer with a systemic infection which owes its origin to foci of infection in the faucial tonsils revealed by the history of attacks of tonsillitis, or is recognized by a careful examination of the tonsils. In all cases of chronic systemic infections the faucial tonsils should always be under suspicion, and in the absence of other foci one should not hesitate to consider removal of the tonsils, provided the systemic infection is severe enough to warrant the operation.

ELLEN J. PATTERSON.

Burckhardt, C. F.: The Function of the Faucial Tonsils and the Indications for Their Removal. Illinois M. J., 1914, xxvi, 517.

By Surg., Gynec. & Obst.

A perfectly normal tonsil has a function as a protective organ the same as any other lymph-gland; but when its condition becomes pathological, this function becomes perverted and it becomes a dangerous portal for the entrance of bacteria and their toxins. The indication is for removal of the tonsil, thus closing a portal for the entry of infectious material into the circulation.

ELLEN J. PATTERSON.

Cott, C. C.: Inflammatory Tonsillar Disease and Its Care. J. Ophth. & Oto-Laryngol., 1914, viii, 356. By Surg., Gynec. & Obst.

The author's conclusions are:

1. Although acute diseases of the tonsil may be cured of the attacks, a recurrence is almost certain because of the structure of the tonsil.

2. To protect the body from general diseases caused by germs which enter through the diseased tonsils and to prevent absolutely recurrent attacks of tonsillitis, enucleation is necessary.

3. The tonsil is a simple lymph-node and, therefore, when removed is not missed in the body functions; instead, a port of entry of bacteria is

closed.

4. Its complete removal is accomplished by several methods, of which the author prefers Beck's when it can be used, and the Sluder or dissection methods in all other cases. Otto M. Rott.

Archibald, A.: Tonsillectomy in the Treatment of Chorea. St. Paul M. J., 1914, xvi, 610. By Surg., Gynec. & Obst.

The practice of performing tonsillectomy in the treatment of chorea is based (1) upon the close relationship existing between chorea and rheumatism, and (2) upon experimental data showing that injection into a dog of streptococci removed from the tonsils of a patient having chorea produced choreic symptoms in the dog within twelve hours.

Concerning the clinical relationship between the

diseases — chorea and rheumatism — the author records the following points of evidence as observed in the cases examined at the Mayo Clinic:

1. The frequency of a previous history of ton-

sillar disease in rheumatism and in chorea.

2. The frequent occurrence of the two diseases together or at different times in the same individual.

3. The liability of the two diseases being complicated by cardiac affections.

Archibald gives a report of seven cases of chorea treated by removing the tonsils, and summarizes

I. It is important to make a careful examination of the upper air passages in nervous children.

2. The close relationship between chorea and the rheumatic infections is confirmed by clinical observations and by bacteriological investigations.

3. Diseased tonsils are frequently associated with chorea and should be dealt with in its treatment.

4. Rapid cessation of choreic symptoms has occurred in the author's experience after tonsillectomy performed during the acute stage.

Отто М. Котт.

# Jackson, C.: The Direct Method of Intralaryngeal Operation. J. Am. M. Ass., 1914, lxiii, 1918. By Surg., Gynec. & Obst.

The direct method is the only one by which the larynx of children can be operated on, and while there are difficulties to be surmounted which require prolonged and constant practice, all movements are under control of the eye, and the operator does not have to develop the ability to move his forceps backward when the image appears to require the forward direction and to substitute for diagonal movement a reversed anteroposterior with a true lateral movement, as in the indirect method. No one method is applicable to all cases and the operator must decide which is best suited to the case in hand.

The author operates under strictly aseptic conditions, using local anæsthetic for adults and none for children, and with children in the recumbent position; while adults, under local anæsthetic, are in the upright position. ELLEN J. PATTERSON.

#### Johnston, R. H.: Straight Direct Laryngoscopy, Bronchoscopy, and Œsophagoscopy. Am. J. Surg., 1914, xxviii, 387. By Surg., Gynec. & Obst.

An aspirated foreign body usually gives rise immediately to a paroxysm of coughing after which symptoms may subside or there may be dyspnœa, cyanosis, expectoration of blood-stained mucus, and, in cases of long duration, symptoms resulting in a diagnosis of tuberculosis.

Diagnosis is made by the history and physical diagnosis with the assistance of the X-ray or fluoroscope: the prognosis is good if the patient is in the hands of a skilled bronchoscopist.

The indications for tracheobronchoscopy are for the removal of foreign bodies, for diagnosis, for treatment of diseased conditions, or for the removal of growths. It should never be undertaken without first having subjected the patient to a thorough physical examination.

ELLEN J. PATTERSON.

Levy, R.: Suspension Laryngoscopy in Children. Laryngoscope, 1914, xxiv, 936.

By Surg., Gynec. & Obst.

The advantages of suspension laryngoscopy are that an unlimited view is obtained of all parts of the hypopharynx, larynx, and the upper parts of the trachea and œsophagus; both the operator's hands are free to manipulate instruments; there is no danger of asphyxia during operation and no serious local after-effects.

The author reports several cases operated upon by him under chloroform anæsthesia by suspension laryngoscopy, the ages varying from eight months to twenty-six years.

Ellen J. Patterson.

### MOUTH

Bass, C. C., and Johns, F. M.: The Specific Cause and the Prompt Specific Cure of Pyorrhœa Alveolaris, or Rigg's Disease. New Orl. M. & S. J., 1914, lxvii, 456. By Surg., Gynec.& Obst.

After finding, in August, 1914, amebæ in a stained specimen of pus from a case of pyorrhœa alveolaris, the authors secured six other cases, the examination of which showed apparently the same species of ameba. Their close resemblance to the entameba of amebic dysentery and the marked specific influence of treatment with ipecac and emetine in that disease led them to think that the same effect might be exerted upon this form of amebic disease also.

A review of the literature of oral protozoans shows that pyorrhœa was observed more than three hundred years ago; also that Grassi, in 1849, observed probably the same ameba; also that ipecac which had been used in the treatment of dysentery more than sixty years ago had been used locally in Rigg's disease with favorable results by Barrett in collaboration with A. J. Smith in June, 1914. So far as they are aware, the authors are the first to use emetine hypodermatically for pyorrhœa. Grassi, in 1849, described the ameba gingivitis. Sternburg, in 1862, described entameba buccalis, which name was retained by Prowazek in 1904.

Ameba Kartulis was described by Kartulis as pathogenic and was found in suppurating tumors of the mouth in Egypt. Smith and Barrett believe that entameba buccalis is pathogenic and present in all cases of Rigg's disease. They report favorable results from local application of emetine hydrochloride.

Chiavaro, in a paper before the American Dental Society, reported having found entameba buccalis in every one of 22 cases of pyorrhæa, out of a total of 68 cases examined. He concludes that the entameba has no pathogenic action; on the contrary, he states that as it feeds on the bacteria it is most probably an adjuvant in the autodisinfection of the mouth. In 87 cases examined by the authors, amebæ were found in 85 of them.

The amebæ are most numerous in the bottom of the lesion. A little of the material is removed with an instrument or toothpick and diluted with a little salt solution and examined with a dry highpower lens, when the organisms with their characteristic movements may be seen. They vary in size from that of a leucocyte to about three or four times that size. No contractile vacuoles were recognized, but nutrition particles, more refractile, and more prominent in appearance were observed. They are stained well with carbol-fuchsin one-fourth minute, after which they are washed, immersed in Löffler's blue one-half minute, washed and dried.

Vedder found solutions of I to 200,000 fluid extract of ipecac destructive to cultures of amebæ. Rogers found that emetine in solutions of I to I00,000 would kill entamebæ in stools, and he began using it hypodermatically in amebic dysentery.

The results of the authors' experiments were

very gratifying.

The 68 cases were under treatment from two days to two weeks. The doses of emetine were one-half to one grain, and only one dose a day was given. Several cases received a dose daily for several days. Others were given one or more doses until the amebæ disappeared, after which an interval was allowed, to determine how long it would be before they returned or what other results could be observed. In several instances no amebæ could be found the next day after the first dose. In a few they were found after the emetine had been given on two successive days, but in no case were they found after it had been given on three successive days.

The experiments have not advanced sufficiently to enable the authors to lay down dogmatic rules as to treatment, but favorable results may be expected to follow the administration of one-half grain emetine hydrochloride hypodermatically daily for three or four days. In all except the early mild cases it may be necessary to repeat the treatment for one or more days after an interval of three to ten days. In the worst cases it no doubt will be found necessary to repeat the treatment several times. Local treatment by scaling should be carried out in conjunction with the hypodermatic as well as local applications of 0.5 per cent emetine into the pockets, which no doubt will favor the success of the hypodermatic treatment.

H. A. Potts.

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# INTERNATIONAL ABSTRACT OF SURGERY

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# COLLECTIVE REVIEW

# THE BACTERIOLOGY OF THE URINARY AND MALE GENITAL ORGANS, NOT INCLUDING TUBERCULOSIS

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In this review the literature of the past nine years has been carefully scanned, the bibliography having been taken from the Jahresbericht für Urologie and the International Abstract of Surgery, 1913–1914. Citations are made only from those references which were considered of actual intrinsic value by the writer. Many sub-references were consulted, dating back as far as 1886. It is thus evident that a wide latitude of judgment was assumed by the writer in his attempt to cover every type of bacterial and parasitic invasion — excepting the tubercle bacillus — of the urinary and male genital organs.

The importance of the various predisposing factors to infection are considered more or less in detail by quoting the various theories put

forth by the authors consulted.

For the convenience of those desiring to utilize the bibliography, it is grouped according to the anatomical classification of the subject matter. Bacteriuria is considered separately.

#### INFECTIONS OF THE KIDNEY

The accepted routes by which bacteria reach the kidney are the blood and lymph streams and the channel of the obstructed ureter. Those factors which predispose to renal infections can be classified into mechanical obstruction, intestinal disturbances, inflammation, and lowered resistance.

Interference with the flow of urine from the

kidney to the bladder may be produced by intraor extra-ureteral obstruction. Calculi in the ureter constitute practically the only form of intra-ureteral obstruction. Neoplasms of the intestines, stomach, and pancreas and adhesions are among the more important conditions within the abdominal cavity that will obstruct the ureter. In the pelvis, uterine tumors and misplacements will often cause pressure upon the ureter in its lower third. The gravid uterus very frequently has associated with it in inflammation of the renal pelvis the so-called "pyelitis gravidarum," which term is a misnomer and should be changed to "pyelitis during pregnancy." That the infection most frequently occurs before conception is now well recognized. In these cases, where accurate histories can be obtained, definite symptoms are often described, extending back to childhood, pointing to a pyelitis which subsequently disappeared, though in all probability a bacteriuria persisted until obstruction was produced by the pressure of the pregnant uterus. It has been estimated by some urologists and obstetricians that as high as 20 per cent of pregnant women have pyelitis. It seems to occur with equal frequency in primiparæ and multiparæ.

In the male, mechanical obstruction producing an impaired urinary drainage is brought about by the enlarged prostate, contracture of the neck of the bladder, and urethral stricture.

The association of kidney infections with in-

testinal disturbances cannot be underestimated. This is often noted accompanying severe ptomaine poisoning or the various auto-intoxications. Stubborn constipation, too, is responsible for more pathology in the urinary tract than is

usually credited to it.

The lowered resistance of the kidney producing a general systemic toxæmia offers abundant opportunity for the lodgment and growth of bacteria carried by the blood stream from remote organs. This condition is best exemplified by such common maladies as typhoid and scarlet fevers; tonsillitis, particularly the epidemic variety; furunculosis, prostatic abscess, and seminal vesiculitis.

It is interesting to note that a careful review of the literature on the bacteriology of renal infections reveals almost uniform conclusions as to the relative frequency of various invading organisms. The colon bacillus is accredited with being the offending bacterium in over 90 per cent of all cases. Next in the order of their frequency are the staphylococcus pyogenes albus, rarely the aureus; the streptococcus pyogenes; the typhoid bacillus; the gonococcus; the bacillus fæcalis alkaligenes; and the pneumococcus. No other bacteria are reported as having invaded the kidneys. Of the parasites, the echinococcus. the Bilharzia hæmatobium, and the actinomyces, in the order of their frequency, are mentioned by various writers. Inasmuch as the colon bacillus has for its normal habitat the intestinal tract, it is readily understood why this organism should be the usual offender in renal infections.

The source of the staphylococci in the male is the urethra, this organism being found in about 20 per cent of the normal male urethras. The streptococcus seems never to be saphrophytic, so its invasion of the kidney is always secondary, most frequently accompanying scarlet fever or tonsillitis, producing what is clinically called acute infective epidemic nephritis or acute hæmatogenous nephritis, which may be unilateral or

bilateral.

In a very interesting and searching paper on typhoid bacteriuria, Vas claims that 20 to 25 per cent of all typhoid patients show the bacilli in the urine.

The bacteriuria usually appears between the second and third weeks of the disease, and in several instances has persisted as long as three years after recovery. Petruschky estimates that there may be as many as a hundred and seventy millions of bacilli to the cubic centimeter of urine.

Considering the prevalence of gonorrhœa it is rather remarkable that the kidney is rarely invaded. Lehr reports twenty cases of gonorrheal pyelitis found in the literature. The writer feels that the diagnosis of gonorrheal infection of the kidney should be weighed with a great deal of reserve, particularly in mixed infections, inasmuch as it is difficult to cultivate the gonococcus, and a diagnosis based upon the morphology and staining reaction is unreliable. Furthermore, unless the urine is obtained from a catheterized ureter, it is impossible to state that the renal infection is due to the gonococcus, and instrumentation in the presence of a urethritis is unwarranted; in fact, unpardonable.

In a detailed report by Oppenheimer of one hundred cases of pyelitis, two cases are said to be due to the bacillus fæcalis alkaligenes, the only record to be found of renal infections from this bacterium. Two cases of pneumococcus

pyelonephritis are mentioned by Picker.

It is of considerable interest to note that a Russian urologist, in an analysis of 2,474 cases of parasitic renal infections, finds that 5 per cent are due to the echinococcus. But five cases of primary actinomycosis of the kidney could be found authentically reported, and seven cases of Bilharzia hæmatobium occurring in this country, all of which cases were among South African negroes, who were with the Boer War Spectacle at the St. Louis Exposition. This parasite is quite common in tropical zones, and many cases are reported.

#### INFECTIONS OF THE BLADDER

Those factors which usually lead to bacterial invasion of the urinary bladder can be classified into: (1) Conditions in the male; (2) conditions in the female; and (3) conditions common to both

Prostatic obstruction is by far the most important pathologic change, which, by preventing a complete emptying of the bladder, causes a decomposition of the residual urine. The obstruction may be an acute or chronic inflammation as well as a true hyperplasia. Contracture of the vesical neck, a condition often not recognized, usually leads to infection of the viscus. Urethral stricture frequently has associated with it a cystitis, more or less marked, according to the location, number, and tightness of the strictures.

In the female, uterine misplacements are common predisposing causes of infections of the bladder. This is brought about by distortions of the bladder wall, whereby folds and pockets are produced, which act as reservoirs for residual urine. Post-peritonitic adhesions in the pelvis also may produce such changes in bladder musculature as to cause incomplete emptying. One author gives separate heading to a form of bladder inflammation noted in newly-married women. This he (Sippel) terms cohabitation cystitis. He has observed and recorded a number of cases. Of those examined the urethra was always found traumatized. The mechanical factors are forcible coitus necessitated by either a vaginismus or a very rigid hymen. The urethræ, where found lacerated, lav low toward the entroitus.

Of all mechanical procedures which lead to invasion of the bladder by pathogenic organisms post-operative catheterization takes the lead. This is equally true in males and in females. This means of emptying the bladder is undoubtedly resorted to unnecessarily in most instances. Either there is faulty sterilization of the catheter or insufficient cleansing of the meatus. Then, too, it must be borne in mind that it is almost impossible to free either the male or female urethra of bacteria, which, though saphrophytic on the untraumatized mucous membrane, easily become pathogenic in the presence of the lowered resistance of a post-operative host.

Only within the past few years has the importance of the accumulated fæces in the rectum in association with vesical disturbances been fully appreciated. The number of cases of cystitis that are due solely to chronic constipation are legion. That intestinal stasis is the direct etiologic factor is proven by the fact that the removal of this cause corrects the cystitis, provided, of course, that the bacterial invasion has not become too marked.

Foreign bodies must be considered as predisposing to cystitis. Calculi are the most frequent. Pieces of catheters, hair-pins, particles of wax, etc., introduced into the bladder by accident, if left, will soon lead to the invasion of hacteria.

It is of interest to note the wide variability in the bacterial findings in vesical infections. In all probability this difference in findings is due to variations in technique, employment of different culture media, and also to the flexibility of bacterial nomenclature. It is evident, in looking over the many results of the writers on this subject, that the same bacteria are called by different names, according to the claim of priority of discovery.

The following tables were selected as probably the most reliable:

Albarran, 304 cases cystitis: 89 bacillus coli, in pure culture. 131 bacillus coli, in mixed culture.

- 70 staphylococcus. 27 proteus vulgaris.
- 18 streptococcus.
- 10 gonococcus pure culture (?).
  3 gonococcus mixed culture.
- 5 typhoid bacilli.
- 3 pneumococci.
- 2 pyocyaneus.

Bastianelli, in 1893, reported his findings in

- 26 bacillus coli 11 in pure culture.
- 10 staphylococcus 6 in pure culture.
- 7 proteus vulgaris 1 in pure culture.
- 4 streptococcus 1 in pure culture. 3 pneumococcus 3 in pure culture.
- 5 diplococcus intestinalis.
- 3 gonococcus 2 in pure culture.
- I tubercle bacillus, in pure culture.

Tanaka, a very reliable investigator, in 1909, analyzed 50 cases of bladder infection, and gives in his results a most amazing nomenclature. No similarity to his terminology has been found in the literary review:

- 4 bacillus ureæ subtilis.
- 4 bacillus ureæ subtilis. Faltine.
- r bacillus ureæ subtilis (eine art von).
- I bacillus ureæ longus liquefaciens, Neuer.
- ı bacillus ureæ albus, Löffler. 1 bacillus ureæ lactis aureus.
- 1 bacillus ureæ flavus liquefaciens.
- 1 bacillus ureæ implexus.
- 1 bacillus ureæ albus non-liquefaciens.
- 2 bacillus urethræ, Melchior. 1 bacillus ureæ, Delbrucki.
- 14 bacillus coli commune.
- 1 bacillus ureæ, Korphus.
- 1 bacillus similityphosus, Maschek.
- 1 bacillus citreus, Franklund.
- 11 bacillus tuberculosis, Koch.
- 2 leptothrix ureæ flava, Neuer.
- 1 bacterium ureæ, Neuer.
- 22 staphylococcus pyogenes aureus.
- 2 staphylococcus pyogenes albus.
- 1 staphylococcus pyogenes citreus.
- 1 micrococcus ureæ septicus liquefaciens.
- 1 diplococcus ureæ aureus liquefaciens. I diplococcus ureæ flavus liquefaciens tardus.
- 4 monococcus ureæ non-pyogenes, Rovsing.
- I monococcus ureæ flavus non-liquefaciens.
- 2 micrococcus cinnabarium, Zimmerman, 1 streptococcus pyogenes.
- 5 gonococcus Neisseri.

The most recent and most convincing analysis of bacteria invading the bladder is the work of V. C. David. He classifies his bacteria into aërobes and anaërobes, in the following table:

#### AËROBES

- 23 bacillus coli.
- 15 staphylococcus albus.
- 3 staphylococcus aureus.
- 5 bacillus enteritides.
- 3 bacillus fæcalis alkaligenes.
- 2 bacillus proteus.
- 2 bacillus pyocyaneus.

I streptococcus.

r bacillus pseudodiphtheriæ.

- r unidentified Gram-positive diplococcus.
- I pneumococcus.
- influenza-like bacillus.

#### ANAËROBES

- 4 black-pigment-producing bacilli.
- 4 Gram-negative, influenza-like bacilli. 2 staphylococcus parvulus.
- I Gram-negative coccus.
- I bacillus funduliformis.
- 2 Gram-positive staphylococcus.

In addition to the infections mentioned in these analyses, isolated cases or small groups of cases are cited, as follows:

D. J. Davis isolated in pure culture in three cases what he terms a hæmophilic bacillus, which morphologically resembles the bacillus of influenza, and grows only on hæmoglobin media. Because of this cultural characteristic Davis suggests that the bacillus may be frequently overlooked. Two of the cases had pyuria, and the third gave a history of a previous urinary in-

Rüdiger reports four cases of carcinoma of the stomach in which the Oppler-Boas bacillus was found in the urine. A mild degree of cystitis was present in all the cases. Special glucose media is necessary to obtain growths. This bacillus has also been found in the urine in carcinoma of the kidney.

Many cases of bladder invaded by hydatid cysts are recorded. These references are usually simple case reports, and the only compilation encountered was a very meager reference made to a report from the Argentine Republic of 148 cases of hydatid disease of the urinary organs mostly involving the bladder. The article was not obtainable. Neisser also reported a collection of five hundred cases of the hydatid disease, but this reference, too, was not available. The single case reports are given in the bibliography.

Bilharzia disease of the bladder is, according to the records, a very common malady in the tropical zones. A number of references will be

found in the appended bibliography.

Two cases of sarcina in the urine, the origin of which was definitely the bladder, are reported by Mueller. He identifies them as "sarcina urica." In one case the infection was mixed with colon bacilli; in the other a pure culture was obtained.

Fischer collected twelve cases of amœbic cystitis. One was associated with amœbic dysentery, another originated from a contaminated water supply. No etiology is given for the remaining ten cases. Eleven of the twelve cases occurred in males.

#### BACTERIURIA

There is a vast literature that is loosely entitled bacteriuria. I make this criticism because a careful examination of most of these articles shows faulty conclusions. It must be remembered that the normal urine is sterile and the bacteria are found in the urine of apparently healthy individ-Their presence is a note of warning, a danger signal, as it were, of some pathological change going on in the urinary or genital tracts. It is true that bacteria are often saprophytic in the urethra and prostate, but never in the kidney or bladder. We must conclude, therefore, that unless it is definitely shown that bacteria in urine originate in the urethra or prostate, and that here, in the absence of pus, bacteriuria as an entity is a misnomer.

Despite the assembling of a very great number of articles under this heading, their perusal reveals comparatively little of interest. Nearly every title could be changed and more correctly placed under the caption of lesions in the kidney, bladder, prostate, or urethra. Of interest and deserving of special mention, however, are the

following observations:

Conradi and Breiast collected a number of cases of diphtheria and examined the urines for the presence of the bacillus. In 155 cases the organism was found in 54. Koch made urinary examinations in 26 diphtheretic patients, and found the bacillus in but two cases. He also examined the urines of 10 scarlet fever patients. and was surprised to find the diphtheria bacilli in four cases. The former observers claim that it is necessary to make repeated cultures before it can definitely be said that the bacilli are not present. They do not state definitely how long after convalescence the bacilluria persists. one case the bacilli were found on the twentyfifth day following complete recovery. cultures injected into animals proved pathogenic.

In urinalyses of sixty patients having carcinoma, sarcoma, and lues, Vedeler found blastomycetes in all. He claims that by staining he can differentiate between malignancy and lues; regardless of the location of the tumor, the mold can be found in the urine. He states that as long as the blastomycetes are to be found in the urine following an operation for malignancy, just so long

is he fearful of a recurrence.

Tanaka reports 11 cases of filariuria without a demonstrable parenchymatous lesion; 7 showed hæmatochyluria; 2 showed only chyluria; and in 2 the urine was clear.

#### THE URETHRA

It is often difficult to make a fine distinction between bacteriuria originating in the urethra and in the kidney. This is readily understood when it is remembered that 20 per cent of males harbor anywhere from fifteen to thirty different strains of bacteria, which, though usually non-pathogenic, may become pathogenic under various stimuli. The female urethra contains saprophytic organisms more frequently than the male, due to the

proximity of the vagina and anus.

It is variously estimated that between 50 and 75 per cent of the males of America and Europe either have had or have gonorrhoal urethritis. This colossal figure naturally makes up the greatest consideration of the bacteriology of the urethra. Thus far eighteen different strains of gonococci have been isolated. The success of the artificial cultivation is still limited to a few who have developed a technique and a satisfactory culture media only after prolonged and tedious labor. The gonococcus is not easy of cultivation outside the urethra, and it is the consensus of opinion of those who know that the often diagnosed Gramnegative diplococcus taken from the test tube is not the true Neisserian organism. The work of Woorden, even though revolutionary, is worthy of citation. This worker claims that most diplococci which are diagnosed as gonococci are involution forms of staphylococci, and that, at will, by varying his cultivation technique, he can transform his organism into one of several types of staphylococci.

Wolbarst has collected 37 cases of gonorrhoeal urethritis occurring in males ranging from sixteen months to fourteen years. In none did any complications occur. The age table is as follows:

1	16	month	ıs.		٠											0	 		٠	 I	case
	18	month	IS.				 			٠	 		۰				 		٠	 I	case
	2	years.									 					٠	 			 3	cases
	4	years.									 	٠								 7	cases
	6	years.		٠		 ٠			٠		 						 		٠	 5	cases
	7	years.							۰	٠	 				٠		 			 3	cases
	9	years.		۰			 				 					۰	 		٠	 2	cases
	10	years.									 						 			 2	cases
	12	years.									 						 			 3	cases
	13	years.				 ٠	 	٠	۰		 						 			 4	cases
	14	years.				 ۰	 				 						 	 ٠		 6	cases

Despite the frequency of gonorrhoal infections of the urethra, it should not be forgotten that every urethral discharge is not due to the gonococcus. The staphylococci are next in frequency; then follow the streptococcus, micrococcus catar-

rhalis, bacillus lactis aërogenes, pneumococcus, and bacillus pyocyaneus.

The micrococcus catarrhalis is of special interest, inasmuch as clinically it produces a pathology very similar to the gonococcus, though much less severe.

Morphologically the two are at times identical, and both are Gram-negative. The differentiation is made by the fact that the micrococcus catarrhalis will grow on ordinary media at room temperature.

Ramond cultivated the following bacteria from the normal urethra. The greatest number are found between the meatus and fossa navicularis. The deeper the approach into the urethra the fewer the bacteria. The bulbous urethra was quite free from any organism in every case examined. The organisms in the order of their frequency are:

Aërobic.

Staphylococcus albus. Staphylococcus aureus. Staphylococcus citreus.

Micrococcus subflavus of Bumm.

Micrococcus lacteus fariformis of Bumm.

Micrococcus citreus conglomeratus of Bumm.

Streptococcus urinarius.

Streptococcus giganticus urethræ of Lustgarten.

Pseudogonococcus of Steinschneider.

Anaërobic:

Various strains of staphylococci.

Bacillus ramosus. Bacillus refrigens.

Very little is written concerning the presence of parasites in the urethra. Pfister, of Cairo, Egypt, reports the frequent occurrence of Bilharzia lodging in the posterior urethra and producing strictures.

#### THE PROSTATE AND SEMINAL VESICLES

The anatomical location of these glands naturally predisposes them to frequent infections. A monograph by Hugo Unterberg on the bacterial flora of the normal prostate gives the following findings: No individual examined had ever had gonorrhoeal or any other infection of the genitourinary tract. The ages ranged from thirteen to sixty. Cultures were made from the urethra, which was then thoroughly irrigated, the prostate massaged, and cultures made.

### Twenty-five individuals examined

	m the urethra positive in 20
	m the prostate positive in
Bacteria fro	m the urethra and prostate identical in10
Prostate ne	gative and urethra positive in

Prostate positive and urethra negative in
Organisms found in urethra
Staphylococcus aureus in urethra
Staphylococcus albus in urethra 5
Streptococcus in urethra 3
Colon bacillus in urethra
Pneumococcus in urethra 1
Organisms found in prostate
Staphylococcus aureus in prostate
Staphylococcus albus in prostate 3
Streptococcus in prostate 2
Colon bacillus in prostate 1
T 1 1 D

In 240 cases of acute gonorrhœa in the Posner clinic there were II cases of prostatic abscess. In 203 cases from the same clinic there were 76 cases of prostatitis. Cultures taken showed the gonococcus mixed with colon bacilli, staphylococci, and streptococci.

Marchildon found two cases of typhoid prostatitis and spermatocystitis. Both patients entered the hospital with typhoid fever and both came to autopsy. Pure cultures of the bacillus were obtained from the prostate and seminal vesicles.

Three cases of echinococcus disease of the prostate are reported, one by Paryski and two by Niecaise.

One case of actinomycotic infection is recorded by Cohn, of Berlin. It occurred in association with a pyonephrosis of the same etiology.

#### CONCLUSION

The writer recognizes full well that all classifications are more or less faulty and that they really represent the ideas of an individual. The foregoing review was arranged with the idea of a logical collaboration of infections of the genitourinary organs to serve as an aid to those doing literary or scientific research work in this broad field of medicine. As far as possible repetition has been avoided, and seldom has any personal criticism of the authorities quoted been interpolated.

Note.—The writer wishes to acknowledge the invaluable assistance rendered him by the reference librarians of the John Crerar Library. Their untiring efforts to correct errors in bibliography have been a great factor in making for the completeness of this review. The promptness with which works are brought from the Surgeon-General's Library in Washington is worthy of special commendation.

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# ABSTRACTS OF CURRENT LITERATURE

# GENERAL SURGERY

# SURGICAL TECHNIOUE

#### ASEPTIC AND ANTISEPTIC SURGERY

Reich-Brutzkus, B.: A Modified Grossisch's Disinfection with Tincture of Iodine for Operations (Über eine modifizierte Grossichsche Jodtinkturdesinfektion bei Operationen). Bern, 1913.
By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

On Tavel's instigation the author undertook the same histological studies of some modifications of Grossich's method as Walther and Tourraine performed with the unmodified method. The modifications are as follows:

1. Grossich, Walther, and others used 10 or 12 per cent official tincture of iodine. In Tavel's clinic a mixture of pure iodine 3, absolute alcohol

10, and chloroform 90 was used.

2. The previously named authors allowed the tincture of iodine to act for 10 minutes; in Tavel's clinic the time varied: seldom 10 minutes, generally 5 minutes, sometimes 2 minutes, and urgent cases I minute.

3. The other authors gave two coats of iodine and a third after the closure of the wound; Tavel gives one coat shortly before the incision is made.

4. Grossich did not remove the iodine with 96 per cent alcohol as Tavel does to prevent eczema and on account of possible catarrh of the mucous membrane.

The following facts were observed among others: The tincture of iodine must act for at least 5 minutes in order to inhibit movement and growth of the bacteria and to kill them. In the 100 cases observed by the author in Tavel's clinic it made no clinical difference in the wound healing when the iodine was washed off with o6 per cent alcohol before the lapse of five minutes. In Tavel's clinic eczema was seldom caused by the iodine, even when 12 per cent iodine was used. In operations on the intestines care was taken to wrap the eviscerated intestines in warm, damp compresses, and, so far as possible, to keep them from touching the skin; therefore they had none of the bad results from disinfection with tincture of iodine which some surgeons have observed. The jodine penetrates the stratum lucidum and it is to be assumed that it also penetrates the rete malpighi. The author thinks Grossich's disinfection with tincture of iodine is the simplest and surest method. FRITZ LOEB.

#### ANÆSTHETICS

Kulenkampff, D.: Recent Progress in Inhalation Anæsthesia (Neuere Fortschritte auf dem Gebiet der Inhalationsanästhesie). Deutsche med. Wchnschr., 1914, xl, 1708. By Surg., Gynec. & Obst.

One of the greatest advances in the administration of inhalation anæsthesia has been the use of apparatus which limits the concentration of the vapor. The unpleasant by-effects of ether are almost entirely avoided if the concentration does not exceed 6 to 7 per cent of the volume of the air breathed. The author believes that anæsthetization should be done with dilute ether vapor and supplemented, if necessary, with other anæsthetics. Chloroform of low concentration, not over 1.7 volume per cent, is best. Mixtures of anæsthetics should not be used, for the concentration of the different components differs and the concentration of the vapor actually given cannot be measured. Masks should be used that admit air freely and do not permit carbonic acid gas to collect. Free change of air with removal of CO2 is the important thing, not the amount of oxygen obtained.

The anæsthetist should look at the patient closely every minute or two and observe the slightest change in color and appearance. The patient's appearance and the fact that he is breathing freely are of much more importance than the condition of the pupillary and corneal reflexes and the pulse. Testing the corneal reflex does no good and may

even be injurious.

The anæsthesia should be kept as light as possible. Very deep narcosis is rarely necessary; patients have in the past been kept under much deeper anæsthesia than was necessary. Von Brunn holds that anæsthesia should be stopped just at the boundary of the excitement stage, Kochmann just in the beginning of complete anæsthesia. It is much better for the surgeon to exercise a little care and patience in the operation than for the patient to be given so much anæsthetic that rougher treatment will not be noticed. The anæsthesia should be kept as uniform as possible; sudden and frequent variations in the degree are dangerous. External rest, from avoidance of noise, etc., is less important than internal rest; that is, a quiet psychic condition of the patient. Therefore a good night's rest should be assured the night before, a sleeping

medicine being given if necessary, and a small dose of morphine just before the anæsthetic to

produce a condition of euphoria.

An important indirect advance has been made by extending the use of local, lumbar, and intravenous anæsthesia, and thus avoiding, or at least limiting as much as possible, the giving of inhalation anæsthesia. The prognosis is much improved in some operations, stomach resection, for instance, by a combination of local and inhalation anæsthesia. Even if all do not agree with Crile's theoretical anoci-association, there is no doubt that even extensive operations can be carried on with much less ill effect on the patient by the employment of such combined methods of anæsthesia. A. Goss.

Gellhorn, G.: Acetonuria Following Spinal Anæsthesia (Über Azetonurie im Gefolge der Spinalanästhesie). Zentralbl. f. Gynäk., 1914, xxxviii, 1204. By Surg., Gynec. & Obst.

Although the fact that acetonuria occurs following inhalation narcosis is generally known, it is not a matter of common knowledge that this occurs following spinal anæsthesia. Gellhorn therefore conducted examinations on 35 gynecologic cases operated upon under spinal anæsthesia, and in two cases only did the acetonuria fail to appear. One case was a cæsarean section and the other an implantation of the ureter into the bladder following a radical Wertheim operation for cancer of the uterus which had compressed the ureter completely and resulted in an anuria of 3 days' standing. All other cases showed a definite acetonuria, appearing in from 8 to 24 hours and lasting as long as 14 days in some cases. The average duration was about 5 to 6 days. The observations were made in different hospitals and the examinations made by different men, so that it can hardly be attributed to errors in technique. The methods of Legal, Lieben, and Gerhardt were employed. No deleterious effect could be ascribed to the acetonuria; all cases recovered uneventfully, except a case of radical extirpation of the uterus for cervix cancer which died of general sepsis after doing well for two

The interesting point in regard to the observation

is question as to the origin of the acetone. Commonly it is supposed that acetonuria develops only in the presence of carbohydrate impoverishment as in starvation, exclusive meat diet, fever, diabetes, nervous diseases, pregnancy, epilepsy, Basedow's disease, after chloroform or ether narcosis. This, however, disappears as soon as carbohydrates are added to the diet. However, the general acceptance of this theory has lately been questioned. Piper observed cases in which acetone appeared after operation in spite of no nutritional disturbances.

Harris studied the subject in infectious diseases and found acetone present in 84.8 per cent of scarlet fever cases, in 90.6 per cent of diphtheria cases, and in 33 per cent of 21 typhoid cases. In 8 severe typhoid fever cases it was absent. Harris concluded therefore that the acetonuria does not depend on decreased food absorption - failure to utilize the carbohydrates. As the diet need not be curtailed preceding lumbar anæsthesia, these cases serve as excellent material in which to test the carbohydrate impoverishment theory. All these cases received a normal diet preceding operation and the last five even had a diet rich in carbohydrates for several days preceding operation; the usual castor oil purging was avoided; food was administered a few hours after operation and still acetonuria set in. The carbohydrate hypothesis must therefore be rejected for some cases, and the origin of the acetonuria must still remain in doubt.

L. A. JUHNKE.

#### SURGICAL INSTRUMENTS AND APPARATUS

Cotton, F. J.: Rubber Gloves: a Technique of Mending. Surg., Gynec. & Obst., 1914, xix, 780. By Surg., Gynec. & Obst.

The author calls attention to the gain in efficiency and economy if in patching punctures or cuts in rubber gloves one uses not the simple bit of rubber but a patch of rubber pasted on a thin card. This prevents curling and the patch is far more neatly and easily put on. Later the glue dissolves in water or the steam of the sterilizer and the card backing of the patch is detached.

# SURGERY OF THE HEAD AND NECK

#### HEAD

Horsley, J. S.: Transplantation of the Anterior Temporal Artery. Tr. South. Surg. & Gynec. Ass., Asheville, 1914, Dec.

By Surg., Gynec. & Obst.

Occasionally defects of the cheek are exceedingly extensive and sometimes require a lining in the mouth as well as an external covering. In such instances Horsley recommends that a flap be turned up from the neck so that the skin side will line the

oral cavity, and that a flap be taken from the forehead which is supplied by the anterior temporal artery. This artery is carefully dissected out, including some surrounding tissue, and is buried under an incision leading from the origin of the artery to the edge of the defect. This incision should not be too deep, as it might then injure the branches of the facial nerve. The flap should be sutured loosely so as to permit slight oozing, which relieves passive hyperæmia. The cause of failure with such a flap would be having too much nutrition, not too little. The paper was illustrated with drawings of the procedure and photographs of two patients that were operated upon by this technique.

Patton, W. F.: Extensive Case of Osteomyelitis, Involving Two-Thirds of Skull, Originating from Frontal Sinusitis. N. Orl. M. & S. J., 1914, lxvii, 318. By Surg., Gynec. & Obst.

Patton contends that infection of the diploë of the bone is caused by especially virulent secretions following traumatism, and that it occurs in two

forms: circumscribed and diffuse.

The former gives rise to the ordinary local symptoms and gradually spreads until the ethmoidal capsule is reached, when it ceases. This form usually answers promptly to thorough resection of diseased bone. The diffuse form is entirely different, for it knows no boundaries, the process continuing until the entire osseous covering of the brain is involved, unless the patient dies of cerebral infection.

All the manifestations in this form are more sudden and acute, the abscess soon points and ruptures, and the underlying bone is found to be spongy and infiltrated with pus, and sequestra are readily formed. In this type of cases the prognosis is exceedingly grave; they usually terminate in general septicamia, thrombophlebitis of one of the large intracranial veins, or meningitis.

The author's case was of the diffuse type. The patient, a man aged 28, had had some nose trouble 6 years previous, for which he had polypi removed

from the left side.

When first seen, a left post-orbital abscess had been opened by an oculist. Examination of the nose revealed ethmoids, anterior and posterior, full of polypi and pus coming from the left frontal sinus. The Mosher operation was performed on the left ethmoids and the frontal sinus was washed out. The patient improved and insisted on returning home. The improvement only lasted one week, when the nose and orbital wounds began to discharge freely and the pain returned.

The patient again came to the city for treatment and a Killian operation on the frontal sinus was performed by a specialist. Again, after slightly improving, he deserted and went home to die, but was persuaded to return to the city, and on December

30th was seen by the author.

Examination revealed both lids cedematous, left eye bathed in yellow pus, both supra-orbital regions swollen and very tender, patient in a semicomatose condition, temperature 102°. Operation was

advised.

The left side opened into the old supra-orbital scar; there were several large sequestra and the entire anterior plate was necrotic. This necrosis was found to extend to the coronal suture around and behind the left external orbital angle, and a large pocket of pus was found between the periosteum and the bone. Upon removing the anterior plate the dura was found exposed and covered with granulation tissue and somewhat bulging. The

left frontal was found ruptured into the right and all the anterior plate necrotic.

The first incision was continued across the bridge of the nose over the right eyebrow to the external angle of the right eye and this entire flap turned back. All the anterior plate was removed from the right sinus, and also part of the nasal bone, the supra-orbital ridges being left. This brought the dura on the right side plainly in view, and after thoroughly curetting the ethmoids on both sides and exposing the sphenoid, the wound was closed, with a drain through the nose, and several counterdrains on the left side; a saline dressing was ordered and the patient sent to the ward. Much to the author's surprise the patient progressed nicely. The infection proved to be a mixed streptococcus and staphylococus. Wassermann was negative.

The wound was dressed and irrigated daily, and on the sixteenth day an autogenous vaccine—streptococcic, chiefly—was given. This seemed to have a decided influence in decreasing the discharge. The vaccine was repeated on the third day, and the wound seemed cleaner and the discharge less. A skiagraph was then taken and extensive necrosis of the right side and several large sequestra were

easily made out.

On January 31 the wound was opened in the old cicatrix, and a mass of granulation tissue was found covering the exposed dura in the frontal region; the frontal and the occipital bones of the right side were found loose and necrotic; all the posterior plate was necrotic and several sequestra were removed.

The patient took the anæsthetic badly, and the necrosis throughout was so extensive that the operation was abandoned after thorough drainage. On the second day he complained of pain and twitching in the left arm, nausea, and extreme nervousness. It was decided to send him home. On the eighth day his left arm was completely paralyzed. He died on the eleventh day with no pain.

Patton claims that this is the most extensive osteomyelitis of the skull he has been able to find a record of. Usually these cases of streptococcic origin are fatal, the germ traveling in the small lymph-channels in the diploë of the bone and gradually involving the entire skull. He was impressed with the absence of meningitis, except towards the last. In view of there being so much bone necrosis and exposed dura he thought this remarkable.

LEWIS B. CRAWFORD.

Councilman, W. T.: The Gliomatous Tumors of the Brain. Long Island M. J., 1914, viii, 401. By Surg., Gynec. & Obst.

From a consideration of 25 cases of brain tumor the following is gleaned: The gliomata resemble in many respects connective-tissue tumors, notwithstanding the fact that they are of epiblastic origin. The most striking common characteristic of the gliomata is their manner of growth, which is by infiltration and not by expansion; that is, in its

growth the glioma replaces tissue, substituting itself for it and not pushing it aside. Another characteristic of the glioma is the tendency to cyst formation. The cysts so formed differ from the cysts in other tumors, which either result from the activity of epithelial secretion or represent the remains of areas of degeneration. Here, however, they are due to the fluid absorption of the tissue and represent an accentuation of a condition common to the entire tumor.

The third peculiarity of the gliomata as a class is the limitation of the tumor to the tissue in which it has originated. Even when rapidly growing the growth is confined to the nervous tissue. Another characteristic of the gliomata is the tendency of the tumor to extend along surfaces. One may see long lines of extension of the growth either on the surface of the brain or in a sulcus connected with the tumor at one point. I. H. SKILES.

Thorburn, W.: The Present Position of Cerebral Surgery. Med. Press & Circ., 1914, cxlix, 424. By Surg., Gynec. & Obst.

The author in the present paper confines himself to the discussion of two conditions: epilepsy and cerebral tumors.

He states that in surgical literature there is almost a complete absence of definite information as to the late results of operation for epilepsy. Thorburn has personally seen many cases of epilepsy held in abeyance temporarily after operations such as hernia, amputation, etc. The only records the author was able to find were those of Cushing and Rawling. Cushing obtained 20.7 per cent of cures

in traumatic cases; Rawling 10 per cent.

In the last thirteen years the author has operated upon 30 cases of various types for epilepsy. Of 10 traced cases, 5 were reported cured and 6 greatly improved. At present the author does not advise operation for idiopathic epilepsy, but suggests that operation be limited to the traumatic cases only. Some bone is usually removed, although bony spiculæ are very infrequent. Osteitis is much more common. Occasionally cysts have been found between the bone and the dura; in some places only adhesions of the dura to the cortex are found. When visible areas of degeneration are seen in the cortex they are removed.

During the last few months there has appeared some valuable data. Howard Tooth published an analysis of 250 operations, von Eiselsberg an analysis of 168 cases. The author adds to these his collection of 57 cases operated upon for brain tumor, making a total of 400 cases. Of this entire number, 116, or 23.6 per cent, were alive a year from the date

of operation.

A large proportion of these tumors are malignant or tuberculous, hence excision of cerebral tumors with hope of radical cure must be exceptional. Surgery, therefore, must not be used as a cure; but rather used to relieve conditions and prolong life.

The author has divided his cases into two classes: those in which the tumor was removed, and those in which decompression and exploration were done. In the former 41.6 per cent lived, in the latter 11.1 per cent lived. The author, however, advises early decompression, as in this way blindness and pressure symptoms may be relieved. EUGENE CARY.

#### NECK

Wetherill, R. B.: Goiter: Differential Diagnosis. J. Indiana St. M. Ass., 1914, vii, 507. By Surg., Gynec. & Obst

The author lavs stress on the complicated symptom picture that diseases of the thyroid gland produce because of the intimate correlation with the other ductless glands of the body. After discussing the embryology, histology, and physiology of the gland he takes up the pathological classification of goiters; viz., (1) the hypertrophic follicular goiter in which all the elements are hypertrophic—the physiologic goiter of puberty; (2) the parenchymatous type, which consists of hypertrophy and hyperplasia of the epithelial cells lining the acini; (3) colloid goiter, in which the epithelium is lower than in the second class, and in which there is a larger preponderance of colloid matter; (4) the adenomatic, in which the glands have their elements formed in follicles without showing a capsule.

For the clinical classification he makes two divisions, (1) toxic and (2) simple. This classification is not satisfactory because the simple goiter may show evidence of a delayed toxemia later on in the disease, even going so far as to produce a typical Graves' disease on an old colloid goiter

base.

The author then adds a list of the differential points in the clinical diagnosis of hyperthyroidism and hypothyroidism covering age, onset, characteristics of the skin and nerve reactions, heart exhaustion, the state of the thyroid gland, body tempera-

ture, analysis of the urine and blood, etc.

As to blood findings in exophthalmic goiter he quotes Mayo in emphasizing that the lymphocytosis is not constantly present in all exophthalmic cases. He takes up the question of blood-pressure and discusses the various findings of the low and high pressure in relation to the stages of thyroid diseases. The presence of glycosuria, he thinks, is dependent on the disturbance of metabolism in hyperthyroidism. As for the presence of albumin in the urine he takes it to be a sign of the degeneration which is present in the liver, central nervous system, etc.

He states that the shape and consistency of the gland will in the majority of cases determine the type of goiter. The hypertrophic and hyperplastic types show gland enlargement but its normal shape is preserved. In colloid, cystic, and in adenomatic and malignant goiters the shape is often irregular. The dyspnœa arising is caused by two factors—one on account of the giving way of the heart muscle from toxemia, and, second, by the pressure on the trachea in the case of the simple goiter. Stenosis of the trachea from pressure can be detected by auscultation, which shows feeble tracheal breathing below the point of obstruction, the aggravation of the symptoms appearing on raising the arms high above the head, and evidence of an area of dullness in the upper border of the sternum below the clavicle are points in diagnosis.

It is important to differentiate enlarged thymus from a substernal goiter, because in the former case operation is contra-indicated. Prominent symptoms of hyperplastic thymus are sudden attacks of dyspnœa accompanied by retraction of the subclavicular intercostal spaces. Hyperextension of the head facilitates dyspnœa, because this position by drawing the upper part of the gland higher in the neck diminishes the space between the vertebræ and the sternum, and hence compresses the trachea.

He joins Mayo in urging that all cases which are operated on should have a previous laryngoscopic examination made of their vocal cords to see if there is any paralysis present due to pressure of the goiter on the recurrent nerve.

In summing up the author urges that all cases of Graves' disease benefited by iodine be carefully studied as to heart symptoms, the condition of their lymphocytosis, their blood-pressure, nervous symptoms, by comparison with those types of diseases aggravated by this medication. Harry G. Sloan.

Frazier, C. H.: A Review of One Hundred Consecutive Operations for Goiter, with Especial Reference to the Treatment of Hyperthyroidism. *Ann. Surg.*, Phila., 1914, lx, 583.

By Surg., Gynec. & Obst.

The author's review is based upon a series of 103 consecutive operations, among which were 81 thyroidectomies, 17 ligations of vessels, and 5 operations for thyroglossal cysts. Grouped histologically there were 34 simple goiters, 29 adenomata, 1 sarcoma, 2 carcinomata, and 32 hyperplastic — exophthalmic — goiters. In the thyroidectomies, there was only one fatality, that of an 11-year-old boy with a large vascular sarcoma. Among the ligations there were 2 fatalities, which occurred in cases which according to our more enlightened conception of the limitations of surgical therapy would be now regarded as inoperable, at least in the acute stage at which the operation was performed.

With regard to the treatment of various lesions of the thyroid gland, and particularly as to the propriety of operation, the author places before the patient a fair presentation of the facts, somewhat as follows: (1) That the operation is peculiarly free from danger; (2) that the patient must decide for herself whether the swelling is sufficiently annoying to warrant its removal; (3) that there is a tendency in a considerable number of cases for simple goiters to undergo certain changes which will affect the heart, kidneys, and liver; (4) that in exceptional instances in later life goiters become cancerous.

As to the risk of operation, there were no fatalities in the author's series of partial thyroidectomies.

As to the end-results in the toxic cases, Frazier's report corresponds with those from other clinics. Of the patients which he had heard from, 90 per cent had fully recovered or were greatly improved; and of the latter a number had been operated upon within one year.

The author finds that the completeness of the cure does not depend entirely upon the successful removal of the gland, but that two other factors must be considered. First, the care of the patients after the operation which should, whenever possible, free the patient from physical and nervous strain for periods varying from several months to two years. Unfortunately, the social status of the patient sometimes makes it impossible to provide these conditions. This must be borne in mind by the practitioner into whose hands the patient falls after operation, and the completeness of the recovery will depend upon his appreciation of the need of this after-treatment, and whether the circumstances permit of its enforcement. Second, the existence of chronic visceral disease at the time of the operation must be taken into account. Some of the patients are physical wrecks with organic lesions of heart, kidney, and other organs, from which complete recovery is impossible. As Kocher has said, if all cases were operated upon within a short time after the outbreak of the disease, they would probably all be cured; and to this might be added that the mortality, low as it now is in all cases, would be reduced to that of as common a procedure as hernior-

Finally, in speaking of the attitude which the general practitioner should take in handling and advising these patients, Frazier states that if the practitioner so chooses he has the right to try non-surgical means in the early stages of the disease before the myocardium, or kidney, or nervous system is permanently damaged. But if he fails to arrest the disease and does not advise operation in the curable stage, he should be just as severely censured as the practitioner who fails to call for surgical aid until his patient with acute appendicitis has developed peritonitis, or one with a callous ulcer of the stomach has developed carcinoma. The conditions are quite parallel. The extraordinary recuperative power of patients with Graves' disease is amazing, and, in most cases, sick as they are at the time of operation, they are almost uniformly restored to perfect or reasonably good health. GEORGE E. BEILBY.

Matti, H.: Relation of the Thymus to Basedow's Disease (Die Beziehungen der Thymus zum Morbus Basedowii). Berl. klin. Wchnschr., 1914, li, 1310, 1365. By Surg., Gynec. & Obst.

Matti reviews the work of many authors on Basedow's disease and comes to the conclusion that an enlarged thymus plays an active part in the production of the Basedow symptom-complex. It is probable that a great majority of cases of Basedow's disease have persistent thymus. Hyperplasia of the thymus is not merely a symptom of a status thymicolymphaticus, but it may occur alone. The symptoms caused by the thyroid are increased by the hyperplastic thymus; the thymus exercises its injurious effect directly by injury to the heart and indirectly through the hypoplasia of the adrenals, which so frequently accompanies it.

It has been argued that the thymus is not involved in Basedow's disease, because some cases with an enlarged thymus run a favorable course; but it must be remembered that the pathological action of the thymus is not necessarily in proportion to its size; moreover, the percentage of patients with hyperplastic thymus is much greater in the severe and fatal cases of Basedow's disease. An exclusively thyroid medication is satisfactory in Basedow's disease. The thymus is sometimes involved to such an extent that it dominates the clinical picture. Recent surgical experiences are cited in corroboration of this statement. The changes in the thymus are coördinate and parallel with the changes in the thyroid and cannot be regarded as secondary compensatory manifestations. Eppinger and Hess' assumption that a distinction can be made between vagotonic and sympathicotonic forms of Basedow's disease cannot be confirmed. Therefore we cannot attribute the signs of vagotonus, such as subjective heart symptoms, without marked change in pulse, sweating, digestive disturbances, diarrhoa, "Basedow blood picture" and severe myasthenia, to hyperplastic thymus.

Pilocarpine and adrenalin tests have only a limited diagnostic value, and can be regarded at most only as supplementary reactions. Thymus hyperplasia must be demonstrated by percussion, röntgenograms, and röntgen illumination; in the latter method the thymus shadow will move on

respiration.

An enlarged thymus is no contra-indication to operation; on the contrary, primary resection of the thymus should be undertaken where there is marked thymus hyperplasia and only slight thyroid symptoms. The symptoms due to the accompanying hypoplasia of the adrenals should be treated with adrenalin. The Basedow blood picture is doubtless not due exclusively to the thyroid; the thymus plays a part in the lymphocytosis, as is shown by the fact that the blood picture has become normal after thymus resection in some cases where it was very little influenced by operation on the thyroid.

Statistics from Küttner's clinic show failure to cure the Basedow's disease in 20 per cent of the cases where the goiter was removed; the hyperplastic thymus is doubtless responsible for these failures. In future study of Basedow's disease special attention should be devoted to changes in the chromaffin system, the genital glands, hypophysis, and parathyroids. There are many reasons for assuming that Basedow's disease is a pluriglandular disease.

A. Goss.

Hart, C.: Significance of the Thymus in the Origin and Course of Basedow's Disease (Die Bedeutung der Thymus für Entstehung und Verlauf des Morbus Basedowii). Arch. f. klin. Chir., 1914, civ, 347.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

It is interesting to note that Hart has changed his opinion considerably in regard to the thymus, which is not surprising as the study of this question is still in the theoretical stage. He supports Svehla's teaching in reference to hyperfunction of the thymus, which has not yet been confirmed by physiological experiments, and which even Adler's and Yokoyama's work does not prove. Anatomically he holds that the lymphocytes of the thymus are derived from some other source, and that the lymphatic components of the thymus have little or no significance, while the epithelial components

are the most important.

In contrast with his earlier works Hart now holds that there are a great number of Basedow cases with which the thymus has nothing to do, and of which he asserts that they have a milder course than those in which the thymus is involved. He discusses the relations between the thyroid and the thymus, although he admits that we do not know much about this question. A change in the thymus he regards as a constitutional stigma, on the basis of which diseases of the internal secretory glands develop, and by which they are governed.

He undertakes to answer the question: "In what way does the thymus influence the clinical picture and course of Basedow's disease?" He distinguishes five different forms of Basedow thymus, but the distinctions are largely theoretical. Here, too, he has considerably modified his earlier views; formerly he had never found signs of involution in a Basedow thymus and he denied the possibility of a revivification, but now he confirms these findings of Pettavel, whose work he does not mention.

He distinguishes, as Klose, Capelle, and Bayer have already done, three forms of Basedow's disease: one due purely to the thymus, one to the thyroid, and one to both. The proof of a pure thymic Basedow's disease still rests on the unsafe ground of theory. He rests his argument solely on von Haberer's case, in spite of the fact that von Haberer himself says that only one case of Capelle and Bayer has ever been permanently helped by thymectomy.

In the Basedow caused by both thyroid and thymus he thinks the thymus is the organ primarily diseased, and that it is the cause of the secondary involvement of the thyroid, but he admits that strumectomy cures the disease, whether due to thy-

roid or thymus.

In conclusion, he points out the relatively frequent hypoplasia of the medulla of the suprarenals in Basedow's disease, and describes a case in which he found the histological picture of hyperplasia of the medullary portion.

Kocher.

Eiselsberg, A. von: Permanency of Thyroid and Parathyroid Grafts and a Discussion of Post-Operative Tetany (Zur Frage der dauernden Einheilung verpflanzter Schilddrüsen und Nebenschilddrüsen, zugleich ein Beitrag zur postoperativen Tetania parathyreopriva). Arch. f. klin. Chir., 1914, cvi, 1. By Surg., Gynec. & Obst.

It is now seldom necessary to transplant thyroids after operation, for a sufficient amount of thyroid tissue can be left on operation, but the question of thyroid transplantation is of importance in disturbances of thyroid function such as myxædema and cretinism that are either congenital or acquired very early in life. Von Eiselsberg describes two cases of cretinism in which he made 6 implantations of thyroid tissue taken from goiter operations. There was improvement, but it was only temporary. This would indicate that the transplanted gland was finally absorbed. In thyroid medication, on the

other hand, the improvement is slow but persistent. His results in the transplantation of parathyroids also indicate that the glands are ultimately absorbed. Such transplantations have generally been made for post-operative tetany.

In the course of the past 12 years among 1,300 operations for goiter the author has had 14 cases of mild tetany which disappeared spontaneously or after the administration of parathyroid tablets, 5 cases of severe and 3 of fatal tetany. It is best to avoid tetany by carefully sparing the parathyroid region; if it develops it should be treated by giving parathyroid tablets, and if that fails by parathyroid transplantation. The removal of even one parathyroid may injure the donor, so it is better to wait until parathyroids can be obtained from infants dying during delivery or from adults dead of accidents. The one case in which he transplanted the parathyroid of a monkey was a failure. A. Goss.

# SURGERY OF THE CHEST

#### CHEST WALL AND BREAST

Müller, G. P.: Chronic Cystic Mastitis. Ann. Surg., Phila., 1914, lx, 595.

By Surg., Gynec. & Obst.

Müller reviews the recent literature and calls especial attention to papers by Judd and one by MacCarty.

He reports 18 cases and in 14 of these he examined slides microscopically for the purpose of classifying them according to MacCarty's scheme. The first 10 cases were of the primary hyperplastic type; i.e., where both the inner or cuboidal cells and the outer layer of cells of the acini were present; these latter cells corresponded to the stratum germinatum of the skin.

In the eleventh case the slide showed the secondary type of hyperplasia; i.e., where the inner cells had disappeared and only the outer or germinal cells remained. This form may or may not become malignant. The other breast of this patient was removed two years later and the hyperplasia was found to be of the primary type.

In the twelfth case the right breast showed primary hyperplasia, but six months later a mass in the left breast was found to be of the secondary type.

In the two other cases secondary types of hyperplasia were found. Of the four secondary types three were traced and reported well at the end of 3, 4, and 5 years, respectively. Of the primary types, which MacCarty considers benign, 8 cases were traced and all were reported cured.

The ages of his patients were: one between 10 and 20 years, two between 20 and 30, five between 30 and 40, nine from 40 to 50, one from 50 to 60; the average age of the primary hyperplasia was 36, the secondary hyperplasia 41.

Clinically, the symptoms are a rather vague mass, palpable in the breast, containing one or more nodules, not adherent to the skin or pectoral fascia; pain is sometimes present and may be referred down the arm.

MacCarty is quoted as advising the complete removal for examination of the entire gland in women over 36; if the primary or secondary hyperplasia be present, nothing more should be done, but if tertiary hyperplasia exists a radical operation should be performed. Müller believes that chronic cystic mastitis and carcinoma are closely allied and that any tendency to conservative treatment in women over 36 years of age is to be deprecated.

D. L. DESPARD.

Taylor, J. M.: The Treatment of Pectus Excavatum—Funnel Breast. N. Y. M. J., 1914, c, 1154. By Surg., Gynec. & Obst.

The author briefly describes this condition, the common causes, and gives treatment that in his experience has proved beneficial.

The deformity is most common and in its pronounced degrees greatly impairs the respiratory competence. He states that in the young as long as there is fair mobility of the ribs or plasticity of collateral structures the deformity is readily overcome. Age is not a hindrance if the patient is willing to cooperate.

The problem is to force the chest to expand, the ribs being brought up to the normal position, and to do so often enough to overcome rigidities and allow the muscles to attain strength to maintain the correct position.

The exercise briefly is as follows:

The patient clasps his hands just below the shoulder-blades, then pulls them apart one against the other extending both downward as far as possible, maintaining both traction and extension with increasing force and holds the position a few seconds at the end of the full downward extension. First the right hand clasps the left, then the left clasps the right, the thumb not being used. The back is held vertical, the belly not protruded, the chin moving up as the hands go down.

The treatment comprises about ten full exercises daily, five with each hand, for two or three monthsthen two or three times a week as thought best.

The author believes this exercise, wisely applied, to be of enormous value; but it requires the same precision, intelligent selection, and application as any other remedy. C. C. CHATTERTON.

Hartshorn, W. E.: Fracture of the Clavicle. N. Y. M. J., 1914, c, 1110. By Surg., Gynec. & Obst.

Hartshorn considers this fracture of importance because of the important supporting function of the bone, the possibility of deformity resulting, especially in women, and the fact that a predisposition to scoliosis may occur in children following this fracture due to narrowing of the shoulder-girdle.

The typical deformity in this fracture is the inward and downward displacement of the outer fragment and slight upward displacement of the inner, due to muscular pull and to the falling downward and inward of the shoulder, carrying its outer fragment with it. The fractures are oblique, transverse with impaction, and greenstick. The oblique are the most common and produce the greatest deformity. The transverse show little tendency to displacement.

Hartshorn has had little satisfaction from the Sayre dressing and its modifications but considers Bellamy's adhesive dressing one of the best of this type. He prefers to use the splint devised by Fayette Taylor or a modification of this made by Peckham of Providence. The Taylor splint consists of a rectangular pad posteriorly which connects anteriorly with an adjustable aluminum splint, the ends of which are on the coracoid process right and FRANK D. DICKSON. left.

Lemann, I. I., and Maes, U.: Artificial Pneumothorax in the Treatment of Lung Abscess. N. Orl. M. & S. J., 1914, lxvii, 321. By Surg., Gynec. & Obst.

Lemann and Maes both claim that when an abscess of the lung is accurately located and when it is accessible, unquestionably it should be treated surgically; that is, by incision and drainage. But oftentimes these abscesses are not easy to locate, the physical signs are sometimes misleading, and the exact site cannot be determined. The authors agree with Robinson, who prefers the responsibility of finding the abscess rather than to risk operation at the late stage when the patient's resistance has been lowered during prolonged observation and repeated negative exploration. Recently the use of the fluoroscope and skiagraph have aided in locating these abscesses.

The accessibility of the abscesses is of the most importance, and because of their inaccessibility in the majority of cases the authors recommend this method. Lemann has seen 4 abscesses of the lung, one in the lower lobe of the left lung, and the other 3 in the right infraclavicular space. Each had been refused operation because of the inaccessibility of the abscess. Maes then thought this an admirable field for the application of the artificial pneumothorax to compress the lung and thus obliterate the abscess cavity.

This suggestion of using artificial pneumothorax to compress the lung in cases of abscess, though described some time ago, does not seem to have met with the recognition it deserves, and a search of the literature for the past seven years reveals only 5 references. Fontanini in 1910 reported the cure of a case, which had persisted for six years, but was cured in a few months by compression.

Izar, Frank and Jagic also report great improvements in cases of bronchiectasis; while on the other hand, A. Schmidt reports the results in 8 cases of bronchiectasis treated by artificial pneumothorax as being far from satisfactory, claiming that the damage to the lung tissue is too great, and that only in the early stages is this treatment beneficial.

In the case reported, all the usual medicinal procedures had been tried out, and because the case was inoperable it was decided to try this compres-

sion method.

The patient, a colored female, aged 11, was first seen Oct. 11, 1913. In June, 1913, she had her tonsils removed, and had never regained strength; in the latter part of the same month she had had what was termed an attack of pneumonia and pleurisy. She recovered only after vomiting a large quantity of foul-smelling pus. From that time on she was seldom free from fever, and always had a cough and free expectoration. When first seen, she was fairly well nourished, temperature 102° and near the apex of the right lung in the right infraclavicular region an abscess could be made out. The sputum was negative except for streptococci, and a skiagraph taken confirmed the diagnosis of cavity.

From October to January the patient went through a number of fever cycles: she would empty the abscess cavity, the fever would drop, and she would improve for a while, only to go through the same thing again. These attacks continued through February, and in the latter part of March the pneumothorax compression was begun. only 500 ccm. of nitrogen gas was injected, but later as much as 1000 ccm. was injected. The aim was to make repeated injections, every week or two, and in that way keep the lung constantly and entirely compressed. As a result in this case the febrile attacks ceased, the cough and expectoration diminished and the patient greatly improved in strength and appetite. A skiagraph demonstrated a complete compression of the right lung, with displacement of the heart to the left.

LEWIS B. CRAWFORD.

Ross, J. N. M.: Some Observations upon Primary
New-Growths of the Mediastinum from a
Study of Sixty Cases. Edinb. M. J., 1914, xiii,
By Surg., Gynec. & Obst.

Ross discusses sixty complete consecutive cases observed at the Brompton Hospital for diseases of the chest in London. These growths are moderately rare. One in 250 admissions out of a total of 20,-745 patients were mediastinal new-growths. It is to be considered, however, that Brompton is exclusively a hospital for the treatment of the chest. At a London general hospital similar statistics showed that one in 360 medical admissions were intrathoracic new-growths; 85 per cent of cases had the onset over the age of 30, 70 per cent between 30 and 50, with 18 years and 70 years as the extremes. Occupation and locality were of no etiologic significance. Men were more frequently affected than women. Sarcoma was the most common form, but the carcinomata affected females three times as often as males; 23.5 per cent gave a definite malignant family history, while in 31.6 per cent there was a definite tuberculous family history.

The common seat of origin was the anterior mediastinum, though most of them had already involved the posterior and bronchial glands. From the mediastinal glands the disease spreads, especially to the pericardium and the root of the lung. All the tumors were malignant. In 93.3 per cent they had involved lung tissue; the right lung was affected in the greatest number of cases. Extra thoracic metastases, especially liver, pancreas, and suprarenal in combination, were frequent and diagnostic.

Emaciation was rarely found. The typical cachexia of malignant disease was never found. In no case was a temperature of over 100° F. found unless some complication supervened, the commonest of which was bronchiectasis or septic bronchopneumonia. Pain, dull and aching, and sometimes in severe paroxysms, was usually present at some stage. Dyspnœa was often the first symptom. It developed insidiously, but usually became prominent. Dyspnœa out of proportion to physical signs was characteristic of the condition. Hoarseness and dysphagia were often present. Vomiting was occasionally found, and hiccough was a distressing symptom in one case. Dilatation of the pupil was rare; contraction from the first was more common. Sudden ædema of the face and neck was often an early and significant symptom. In many cases in addition the superficial veins of the thorax became dilated and tortuous. The arteries always escaped compression. In 63 per cent, blood in small amount and not frequently repeated was found in the sputum, though hæmoptysis was the cause of death in three cases. The expectoration was, as a rule, scanty, thick, and mucoid, but no malignant cells were found.

Percussion was found to be the most valuable of the ordinary methods of examination, though it was not the rule to find the classical submanubrial dullness. Abdominal examination should be made for secondary growths, which are often easily palpable. Twenty-nine cases had pleural effusion, 51 per cent of which showed blood to the naked eye. No cancer-cells were found, but a high percentage of lymphocytes was suggestive. The effusion developed insidiously and with few symptoms. Radiographic examination was of value in the diagnosis.

As to prognosis, the average duration from the first symptom was 32 weeks, with 88 weeks as a maximum and 9 weeks as a minimum, with a tendency to a short course in the younger patients.

W. H. Buhlig.

König, F.: Relief of Pressure in Mediastinal Tumors (Druckentlastende Operation bei Mediastinaltumor). Beitr. z. klin. Chir., 1914, xciv, 538. By Surg., Gynec. & Obst.

In 1912 Sauerbruch reported four cases operated on for relief of pressure symptoms due to mediastinal tumor. A transverse mediastinotomy was used and an attempt made to remove the tumor. The results were neither curative nor permanent. König recommended a method first employed by Milton in 1897 of splitting the sternum longitudinally for its entire length. In addition to this in the case operated on he inserted a wedge-shaped piece of ivory which separated the two portions of the sternum for 1.5 centimeters. The cyonosis, dyspnœa, and other pressure-symptoms were promptly relieved. Post-operative X-ray exposures were given. The patient died shortly after.

E. P. ZEISLER.

Fischl, R.: Experimental Study of the Action of Thymus Extract (Experimentelle Untersuchungen zur Analyse der Thymus-extraktwirkung). Jahrb. f. Kinderh., 1914, lxxix, 385, 583.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author performed numerous experiments on rabbits, giving intravenous injections of extracts of the thymus of calves, lambs, and pigs, as well as extracts of other organs. He denies that extract of thymus has any specific effect, and says that the effect is the same as that of the injection of extracts of various other organs, such as lung and lymphglands. The effect in all cases is a fall in bloodpressure and disturbances in pulse and respiration. The death of the animals results from paralysis of the heart caused by coagulation of blood in its cavities. It is due neither to asphyxiation nor to toxic influences, as is shown by the inconstancy of ecchymoses on the surface of the lungs and the lack of changes in the adrenals. The condition of the pulse and respiration in the use of extracts of a nonspecific nature, to which that of the thymus belongs, indicates that the effect is due to the coagulation of blood during life. The terminal convulsions are probably due to anæmia.

Conclusions made by previous observers with reference to a post-feetal function of the thymus cannot be confirmed from the experiments, and these experiments justify the unconditional rejection of the teaching in regard to hyperfunction of the

The author gives a critical review of the literature of the subject. Thymus extracts prepared in different ways show an absolute lack of effect in about 50 per cent of the cases, and this cannot be explained by the method of preparation or in any other way. Such ineffective extracts do not influence blood coagulation in vitro, while effective extracts overcome even a strong hirudin action. In animal experiments the blood coagulation in the heart and vessels resulting from thymus extract can be overcome or very much weakened by previously treating the animals with hirudin. On the other hand the blood can be coagulated by relatively small doses of extract when the maximum possible amount of blood is withdrawn from the animals and replaced by Ringer's solution. It is also noteworthy that the reaction of different animals to the same extract is different, and that the effectiveness of the thymus extract, which does not appear to be united with the cells, is not markedly influenced by cooking, but is inhibited by filtration. Section of the vagi does not influence the effect; paralysis of the ends of the vagi by atropin does not produce a constant effect. By repeated application of small doses at short intervals animals may be rendered so insensitive to the effect of thymus that multiples of ordinarily fatal doses can be borne without any symptoms; on the other hand, repeated infusions at longer intervals lead to the development of anaphylactic symptoms.

Morgan, H. J., and Dachtler, H. W.: Thymic Asthma Successfully Treated by X-Rays. Surg., Gynec. & Obst., 1914, xix, 781.

By Surg., Gynec. & Obst.

The first case, an infant aged 20 weeks, had a history of colds and snuffles; recently had two suffocative attacks, dyspnœa, and cyanosis; never complete absence of symptoms. Hypertrophied thymus was diagnosed by percussion, and later by X-rays. In the absence of adenoids, enlarged bronchial glands, and other causes of laryngeal stenosis, a diagnosis of thymic asthma was made. Six exposures were made to X-rays at a distance of twelve inches through a leather filter at intervals of two, one, one, six and ten days respectively. At the first three and the fifth treatments, one Holzknecht unit was given, fourth treatment one-half unit, and last treatment one-quarter unit. was improvement in all the symptoms after the third treatment and a complete cessation after the sixth treatment.

A röntgenogram taken three weeks after the treatment was begun shows a normal thymus. During treatments complete aphonia occurred lasting twenty-three days; there was a loss of weight of five ounces.

Blood examination showed a reduction in the white cells from 15,000 to 7,000, and in eosinophiles, from 4 per cent to 2.5 per cent. There has been no recurrence of symptoms in four months.

The second case, aged 18 months, had at four months of age had dyspnœa, cyanosis, and at fourteen months had suffocative attacks. The child was always cyanosed. The attacks were brought on by exposure and handling.

Hypertrophied thymus was diagnosed by per-cussion and verified by X-rays, and after exclusion of other causes of laryngeal stenosis, a diagnosis of

thymic asthma was made.

The treatment consisted of four exposures to X-rays, at a distance of twelve inches, through a leather filter at intervals of two, three, and four days respectively: the first three treatments one Holzknecht unit was given, the last treatment one-half unit.

Improvement in all symptoms was noted after the third treatment, and completely disappeared

after the fourth treatment.

A röntgenogram taken three months later shows a normal thymus. There has been no recurrence of symptoms.

#### TRACHEA AND LUNGS

Paunz, M.: Rupture of Tuberculous Tracheobronchial Glands into the Air-Passages in Childhood (Über den Durchbruch tuberkulöser Tracheobronchialdrüsen in die Luftwege bei Kindern). Jahrb. f. Kinderh., 1914, lxxx, 386.

By Surg., Gynec. & Obst.

Paunz reiterates that tuberculosis in children is most frequently localized in the tracheobronchial lymph-glands. It is almost always secondary to primary infection in the lungs. Sometimes the foci in the lungs are so small that they are overlooked, but they are there nevertheless in the great majority of cases, showing that the infection takes place by inhalation. He discusses the cases of rupture of tuberculous glands into the trachea and bronchi that have been reported in the literature, including 4 of his own previously published, and describes in detail 4 additional cases of his.

The symptoms of pressure in the air-passages are cough and difficulty in breathing. After rupture takes place there are attacks of suffocation. There may also be unilateral dilatation of the veins of the neck and slight ædema of the face from the pressure. In addition to the ordinary clinical examination for tuberculosis, röntgen examination of the glands should be made. Another important aid in diagnosis is direct tracheobronchoscopy, but in children it is preferable to use this only as an introduction to treatment.

The treatment in mild degrees of compression may be only the usual treatment of tuberculosis; sea air and heliotherapy are valuable adjuvants. Severer degrees of compression should be carefully watched on account of danger of rupture. After rupture has taken place tracheotomy should be performed at once, followed by tracheobronchoscopy from below.

The caseous gland should be treated as a foreign body. The rupture at first is generally only a small one, so there is abundant time for operative treatment before suffocation is fatal or even dangerous. Among 10 patients treated in this way 7 recovered and 3 died. The discharge of the gland through perforation is often the last act in the spontaneous healing of tuberculosis, which is not at all unusual in children over two years of age, increasing with advancing age. Therefore the prognosis is not bad. Only 2 of the 10 children showed signs of pulmonary tuberculosis later. If all cases of glandular tuberculosis were carefully followed the prognosis could be improved.

A. Goss.

#### PHARYNX AND ŒSOPHAGUS

Franscolla, W. A.: Diverticula of the Esophagus; the Treatment of Cicatricial Stenosis of the Esophagus. Chironian, 1914, xxxi, 110.

By Surg., Gynec. & Obst.

The author discusses the treatment of stenosis, the chief symptoms of which consist of dysphagia. The treatment may be divided into medical and surgical. Medical treatment consists of feeding

with concentrated liquid foods. Water must be given per rectum especially in the cases of complete stenosis. Rectal feeding may be resorted to. To ease the pain and facilitate deglutition, opium and belladonna in glycerine may be given before feeding. Thiosinamine may be used as an auxiliary to the treatment of dilatation, as the drug has a softening action on the scar tissue.

The author's surgical treatment consists of bloodless and operative dilatation. If the passage of sounds or filiform bougies is unsuccessful and the patient is becoming rapidly emaciated, a gastrostomy should be done. Soncin's and Mikulicz's modified method of Haeckner can be employed. This in brief consists of swallowing a silk cord which is fished out of the gastrostomy and used as a tractor to pull through graduated drains. Abbe uses a silk string to saw through the stricture which is held tense by a conical bougie. Ochsner uses a silk string by which he draws a rubber tube through the gastrostomy opening, doubled into the stricture. Franks uses electroylsis with success. In internal œsophagotomy death often results from hæmorrhage; external œsophagotomy is nearly always EUGENE CARY. fatal.

# SURGERY OF THE ABDOMEN

#### ABDOMINAL WALL AND PERITONEUM

Fobes, J. H.: Plan and Scope of the Lumbar Incision. N. Eng. M. Gaz., 1914, xlix, 638.

By Surg., Gynec. & Obst.

The author states that a satisfactory extirpation of the appendix and of the gall-bladder can be carried out through the ordinary lumbar incision made as a rule for kidney operations. He states that the advantages of the lumbar incision are: (1) Hernia and many other complications of the anterior incision are practically unknown through the lumbar incision. (2) Through the lumbar incision it is not only possible, but reasonably easy, to perform satisfactory operations, not only upon the kidney, but also upon the appendix and gallbladder. (3) It is much better to clear up the pathology of the case through one incision than to make two incisions or to operate in two or three stages to obtain the same result. V. D. LESPINASSE.

Lewis, E. G.: Pseudomyxoma of the Peritoneum. Surg., Gynec. & Obst., 1914, xix, 757. By Surg., Gynec. & Obst.

Lewis reports a case of peritoneal pseudomyxoma which followed 22 years after the removal of bilateral ovarian cystic tumors. At autopsy beside an ascites, the omentum, the parietal peritoneum, and the peritoneal coverings of the abdominal viscera were extensively studded with implantation tumor metastases which consisted of masses of small cysts separated by a relatively scanty stroma.

These cysts contained clear gelatinous material. Microscopically, they were lined by a single layer of cuboidal, flattened, or cylindrical epithelium, were separated by a fibrous stroma, and contained homogeneous material staining with hematoxylin.

At an exploratory operation three months before death a considerable amount of ascitic fluid was removed which was examined chemically. This showed a considerable amount of albumin and globulin, but no mucin. After removing coagulable protein from the fluid, pseudomucin was readily demonstrated by Hammarsten's method as follows: After evaporation to small volume, five volumes of absolute alcohol were added and the resulting white precipitate filtered off and redissolved in distilled water. This was then hydrolyzed with HCl, and after neutralization gave a well-marked reduction of Fehling's solution.

Since no cases of pseudomyxoma of the peritoneum have been diagnosed prior to operation, such a test for pseudomucin in the ascitic fluid of cases with obscure ascites, especially when a pelvic tumor is suspected or when there is a history of a previous pelvic operation, would be of value.

Drehman: Pancreatic Peritonitis (Die Peritonitis pancreatica). Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

On the basis of experiment and study the author comes to the conclustion that the necrosis of fatty tissue that appears in acute pancreatitis is accompanied by a peritonitis. This peritonitis is at first aseptic in nature, but in its further course may become septic. It is distinguished from the ordinary septic peritonitis by its lack of tendency to extend and by its relatively benign character. It should therefore have a special name — pancreatic peritonitis. It appears in two forms, an adhesive peritonitis or an exudative peritonitis with a hæmorrhagic exudate. The latter form has a worse prog-The peritonitis is caused by the fat necrosis, which is spread through the blood and lymph chan-The hæmorrhagic exudate in the abdominal cavity therefore only transmits the pancreatic ferment in exceptional cases. The symptoms of ileus that appear in acute pancreatitis are to be attributed to the pancreatic peritonitis. Laparotomy under these circumstances can only indirectly influence the peritonitis by causing a hyperæmia in the abdominal cavity. This hyperæmia has a favorable effect on the encapsulation of the fatty necrosis; it furnishes better nutrition for the peritoneum, therefore recovery from the peritonitis may be hoped for.

KÜTTNER of Breslau, from his experience, gives a warning against using the pancreas to cover the duodenal stump. He believes the mortality is doubled by such a procedure. He has seen death from fat necrosis, hæmorrhagic peritonitis, and sudden death without anatomical findings result

from the use of this method.

Bertelsmann of Kassel says that the retroperitoneal space in which the pancreas lies must be

incised.

Körte of Berlin has generally seen the exudative form of acute pancreatitis with a more or less bloody tint to the exudate. He has operated on 5 cases in the early stage and 4 of these cases recovered. In his last case there was a retroperitoneal phlegmon on the right side, and bile in the abdominal cavity, although no rupture could be demonstrated. Recovery followed extensive suppuration.

Fatty necrosis in the omentum is important only in the diagnosis; in treatment it can be left to itself. The pancreas must be laid bare and operated upon KATZENSTEIN.

directly.

#### McLean, J. B.: The Surgical Treatment of Diffuse General Peritonitis. M. J. Austral., 1914, i, 439. By Surg., Gynec. & Obst.

Since the adoption of the technique of the methods of Murphy in the treatment of this condition, the mortality in the Brisbane Hospital has been largely reduced, and it is only rarely that a case is lost. The essentials of the technique are as follows:

I. Rapid elimination of the cause with the least

possible handling of viscera.

2. Tubular drainage of the lowest portion of the pelvis and free drainage through the incision.

3. Elimination of all time-consuming procedures.

4. Fowler's position after operation.

5. Salt solution per rectum.6. Nothing by mouth in order to prevent peristalsis. Opium only if necessary.

The treatment adopted by the author varies

somewhat from the above. The focus of infection. such as a ruptured bowel or gangrenous appendix. should be removed, but no attempt should be made to mop out the contents of the abdominal cavity. A tubular rubber drain with a wick inside and a gauze drain alongside is inserted down to the bottom of the pelvis through a low incision. The usual appendiceal incision will meet the case, while a small drain is also placed at the focus of the trouble if the latter is not in the line of drainage. Ordinarily the operation does not take over 20 minutes and afterward the patient is placed in Fowler's position. Enemata are given on the second or third day; purgatives are avoided until the danger of peritonitis has passed. Saline solution is not used, the claims that it helps to increase the secretion of urine and reverses the current in the lymphatics of the peritoneum being difficult to understand. It will not always work satisfactorily; the patient is always uncomfortable and does just as well without it.

Fowler's position permits the septic abdominal contents to gravitate to the area where the drainage tubes will act freely, and has the great additional advantage of largely freeing the patient from nausea and vomiting. As a rule the bed can be lowered on the third or fourth day and the patient kept in the sitting position for a few days. E. K. Armstrong.

#### Fowler, R. H.: Diaphragmatic Hernia. Am. J. By Surg., Gynec. & Obst. Surg., 1914, xxviii, 469.

The case report and autopsy findings in a case of diaphragmatic hernia in a male patient, age 53, are here given by Fowler. The patient entered the hospital on the fourth day of his illness. On account of deafness and mental defectiveness a history of his illness was unobtainable. A sudden acute pain in the abdomen, becoming more intense with time, no bowel movement for four days, vomiting several times daily since the onset of his illness, and a slight rise of temperature, were his chief symptoms. The abdomen was distended and tympanitic. There was no special point of tenderness over the abdomen. The liver and spleen were not palpable. With the aid of enemata the patient was able to pass some flatus and fæces. The patient entered the hospital on the tenth day of October and died on the fifteenth day of the same month, during which time he vomited daily, suffered pain, and had distention of the abdomen. The urine examination was negative. There was a slight leucocytosis.

The autopsy findings were as follows: right-sided hernia of the transverse colon and omentum through the diaphragm at the site of Larrey's space; diffuse peritonitis of the lower abdomen; multiple perforations of the sigmoid; gangrene of the small intestines; ulcer of the cæcum; plastic peritonitis in the upper abdomen; adhesive pleuritis; chronic pulmonary œdema; chronic myocarditis; chronic parenchymatous nephrits; prostatic calculi; chronic endocarditis of the aortic valve; aortitis; bilateral corneal opacity; and external hæmorrhoids. E. C. ROBITSHEK.

Henson, J. W.: A Proposed Addition to the Technique in the Radical Operation for Median Ventral Hernia Where the Tension on the Sutures Would be Excessive. Internat. J. Surg., 1914, xxvii, 413. By Surg., Gynec. & Obst.

The author makes a series of incisions, each an inch or an inch and one-half long, directed outward and upward obliquely across the fibers of the aponeurosis of the external oblique just outside of the rectus muscle.

The intervals between the incisions should be such that the outer end of each incision will cut fibers just beyond the reach of the inner end of the one

just below it in the series.

After closure of the hernial opening, each incision will be shorter and will gape a little, but the edges can easily be brought together by sutures. After healing there seems to be no weakness of the wall at this point.

Henry J. Van den Berg.

#### GASTRO-INTESTINAL TRACT

Matas, R.: Hair-Balls in the Gastro-Intestinal Tract; Report of a Case with Special Reference to the Pre-Operative and X-Ray Diagnosis. Tr. South. Surg. & Gynec. Ass., Asheville, 1914, Dec. By Surg., Gynec. & Obst.

Matas exhibited a large hair-ball (trichobezoar), removed successfully at the Touro Infirmary in May, 1914, from the stomach of a young white woman, aged nineteen years, who, as a child, had acquired the hair-eating habit while suffering from uncinariasis. On June 19, 1914, the patient was discharged from the hospital completely recovered after operation.

The mass weighed two pounds, three-fourths ounce, or approximately 967 grams. It was shaped like an inverted gourd, and was molded to the contour of the stomach. In the dry state it measured 18 inches, or 26 cms., in its broadest circumference; 8.25 inches, or 20 cms., around its middle portion, and 8.125 inches, or 17 cms., in its narrowest circumference. The widest part filled the fundus of the stomach and the narrowest filled

the pylorus and duodenum.

It consisted of a mass of matted black hair which, when dry, was felted, and gave the appearance of the hair of a wild animal. Mixed with the hair were particles of earth and vegetable food stuffs, which had gravitated to the center of the mass and were held in the tangle by mucoid and other organic The mass not only filled the stomach in its matter. entirety, but was gripped tightly by its walls in many places. An incision 6.5 inches along the anterior surface of the organ was required to permit its extraction. When removed from the stomach, it was covered with a thick slimy coat of extreme foulness. The only space for the passage of food was a narrow interspace between the mass and the lesser curvature, where fluids and semisolid foods could be forced from the cardia to the pylorus.

After discussing the history, statistics, and

clinical peculiarities of the gastric and intestinal hair-balls, and the results of surgical operations for their removal, which were eminently satisfactory, the author dwelt with special emphasis on the X-ray and the pre-operative diagnosis of this rare condition. The great value of the fluoroscope and radiograph in the diagnosis was demonstrated by the exhibition of X-ray plates of this case and the reports of the few cases in which X-ray studies had been made in very recent years for diagnostic purposes.

By following the rules laid down by C. Thurston Holland of Liverpool, July 1913 and March, 1914, it was comparatively easy to make fluoroscopic diagnosis not only of a gastric tumor but of an intragastric and detachable mass, which, if molded to the shape of the stomach, would practically rule out any other condition but a hair-ball.

Smithies, F.: Gastric Cancer in the Young; a Study of Sixteen Instances in Patients Under the Age of Thirty-One. J. Am. M. Ass., 1914, lxiii, 1839. By Surg., Gynec. & Obst.

Smithies' article concerns sixteen instances of gastric cancer occurring in patients under 31 years of age as collected in the study of the records of 721 pathologically demonstrated cases of cancer of the stomach at the Mayo clinic and at Augustana Hospital. This is 2.2 per cent of cases in his series. In a statistical report by Welch the percentage was 2.8; in 150 cases analyzed by Osler and McCrea the proportion was 4 per cent.

Of the author's cases 9 were females and 7 males; the youngest was 18 years of age, the oldest 30. In 2 instances there was a family or blood-relationship history of cancer. The average duration of

the disability was 4.2 years.

In 38 per cent of the cases the appetite was poor; all exhibited some degree of constipation, and loss of weight was a marked symptom, the loss averaging from 17 to 35 pounds. Abdominal pain or distress was in some degree present in all, although in 2 cases of "primary cancer" pain was never severe and never definitely localized. Abdominal tenderness was also present in all cases. Tumor was palpated in 38 per cent of cases. Eructation and vomiting were present in all cases. In 62.5 per cent of the cases altered blood was found in the stools. Retention of food was found in 73 per cent and the average total acidity was 50, the free hydrochloric acid being absent in but one case, the average being 26. Lactic acid was demonstrated in 40 per cent of cases.

Abdominal section revealed 5 cases of pyloric involvement, 9 of the lesser curvature, 1 of the cardia, and 1 of general carcinosis.

EUGENE CARY.

Case, J. T.: X-Ray Evidences of Gastric Carcinoma. Canad. M. Ass. J., 1914, iv, 1066.

By Surg., Gynec. & Obst.

In view of the distrust and even ignorance prevailing concerning the value of X-ray diagnosis of gastric carcinoma, Case submits a summary of the indications and advantages of this method.

The normal stomach, into which a suspension of some opaque salt has been introduced, presents a characteristic shadow, subject to certain normal indentations, viz.:

r. The splenic notch, usually present at the upper border of the greater curvature, and due to the pressure of the spleen against the greater curvature, whereby one may judge as to the size of the spleen.

2. The changes in the shape of the stomach shadow produced by the peristaltic waves are varying but characteristic, and are easily recognized under the fluorescent screen or by radiograms.

3. The pyloric sulcus, the break between the shadow of the stomach and the shadow of the first portion of the duodenum — variously termed bulbus duodeni, duodenal bulb, stomach cap, pilleus ventriculi — is normally about one centimeter in width.

Excluding these normal indentations, any defect in the shadow must be regarded as suspicious of malignancy, and its identity should be determined. In favorable subjects, the screen study of the contour of the gastric silhouette is very satisfactory, although even in these cases Case usually makes several radiograms as a matter of record. In heavy patients, ten or twelve radiograms usually suffice. Unsuspected gall- and kidney-stones have been discovered in this manner, and in patients too heavy for favorable fluoroscopy the serial radiograms have made possible the discovery of relatively early carcinoma.

Case refers to the "symptom-complex" of Holz-knecht, only to warn against its unreliability. He has seen cases fitting perfectly into the symptom-complex which at operation proved to be not malignant, but due to adhesion bands, or to pressure of extraventricular masses, or to gall-stones; and sometimes no pathology at all could be demonstrated.

Thanks to a routine which requires that all patients about to be subjected to laparotomy be first submitted to a thorough bismuth meal examination of the entire gastro-intestinal tract, Case has been able to check, at operation, the X-ray findings in hundreds of cases. For instance, in a patient operated upon for uterine fibroids, the surgeon, as a routine procedure at operation, examines and records the condition of the gall-bladder, the pylorus, the duodenum, the appendix, the terminal ileum, etc., so that the pre-operative X-ray findings, negative or positive, even though not directly relating to the object of the operation, are corrected and future errors minimized.

The symptom-complex method is unnecessary, since serial radiography and, when necessary, cinematography affords us a means of studying intimately the contractility of the entire gastric wall, and of excluding even very small indurating lesions. Case records the statement that up to the present, since he has been prepared by equipment and experience to make these thorough studies, not a single case of carcinoma of the stomach to his knowledge

has been revealed at operation where previous X-ray examination had failed to show an organic lesion. There are cases, particularly the early cases, where, from the X-ray examination alone, it can only be determined that there is a mass. The possibility of syphilitic and sarcomatous lesions or a tuberculous mass being present must also be considered. A careful study of the gastric silhouette by means of the fluoroscope and a series of radiograms, should permit a positive or negative opinion to be formed as to the presence of a filling defect.

The filling defect may be characteristically irregular or otherwise definitely suggestive of carcinoma without the corroboration of clinical findings, but as a routine procedure all the evidences of clinical research should be added to the X-ray findings.

The gross filling defect produced by a tumor of the lower half of the stomach on the greater or lesser curvature is usually obvious. Characteristics are:

curvature is usually obvious. Characteristics are:

1. Permanence. The filling defect is of the same size, location, shape, and outline at various observations.

2. The filling defect usually coincides with a point of tenderness on pressure. Absence of pain-point does not lessen the importance of a filling defect.

3. Screen examinations and serial plates show that peristaltic waves fade out as they reach the defect and, if the defect is not too near the pylorus, reappear beyond it. An inflammatory mass about an ulcer may give this sign.

4. With a lesion near the pylorus, even without direct stenosis, antiperistaltic waves may be seen; these are pathognomonic of organic lesion, not necessarily malignant, but, with a filling defect, very suggestive.

5. Unless actual obstruction exists, there is usually an early clearance of stomach contents in a manner characteristic of achylic

manner characteristic of achylia.

Case emphasizes the importance of complete gastro-intestinal examination in every case of suspected gastric malignancy, to rule out extension and metastasis.

In differentiation between benign and malignant pyloric stenosis Case finds a position with the patient lying on the right side, the tube behind, and the plate or screen against the abdomen, of value.

In spite of the assurance often warranted in negative diagnosis of gastric malignancy, it is striking that radiologists rarely diagnose early carcinoma of the stomach. It is rare indeed that truly early carcinoma is seen at operation. In hundreds of cases operated upon, not more than a dozen of the gastric malignancies could be considered as early. The morbid sensations produced by gastric malignancy are of such an indefinite nature that the patients seek medical aid only when it is too late for early diagnosis.

The author suggests that the X-ray test be made a routine procedure in examining every case pre-

senting gastro-intestinal symptoms.

DAVID R. BOWEN.

Holding, A. F.: The Röntgenologic Method of Differentiating Between Ulcer and Cancer of the Stomach and Duodenum. Am. J. M. Sc., 1914, cxlviii, 866. By Surg., Gynec. & Obst.

The author gives a review of the literature and has constructed a very full and descriptive table to differentiate ulcer from cancer. He lays stress on the fact that to make a röntgenologic diagnosis of a gastric lesion that is in any way accurate a large number of pictures must be taken (serial röntgenography), which, of course, means added expense to the patient. His conclusions are as follows:

1. The röntgen method is the most accurate and at the same time the most expensive single method of diagnosing gastro-intestinal lesions. It is also

the safest and most valuable to the patient.

2. A pre-operative röntgen examination in abdominal cases (1) will save many a patient from the shock of an exploratory operation; (2) should shorten the time duration of the operation; (3) should improve surgical statistics.

3. An exploratory operation for diagnosis is usually evidence of inadequate röntgen methods.

4. A post-operative röntgen examination of abdominal cases will lead to important modifications in the technique of such operations, just as post-treatment röntgen examination of fractures has modified general surgical measures.

5. Schmieden states: "A scientific diagnostician will not diagnose gastric lesions on röntgen-ray examinations alone, nor should he diagnose important gastric lesions without using the röntgen rays."

LUCIAN H. LANDRY.

Wilson, L. B., and McDowell, I. E.: A Further Report of the Pathologic Evidence of the Relationship of Gastric Ulcer and Gastric Carcinoma. Am. J. M. Sc., 1914, cxlviii, 796. By Surg., Gynec. & Obst.

The authors report 445 pathological specimens of gastric carcinoma received in the Mayo laboratory during the past nine years; 46 of these were removed at autopsy; 399 were dissected by the surgeon.

The latter were classified into four groups:

- 1. Ulcer with cancer questionable. Ulcer with beginning cancer.
- Ulcer with advanced cancer. Cancer throughout the lesion.
- 1. The significance of this group, comprised of 19 cases, is that four have died of carcinoma.
- 2. Of 41 cases, 18 have died of carcinoma, 6 in less than 30 days; the remaining 12 lived an average period of twenty-eight months after operation.
- 3. Of 94 cases, 58 have died, 18 in less than 30 days; the remaining 40 died an average period of 14 months after operation.
- 4. Of 97 cases, 78 have died; 38 in less than 30 days after operation; the remaining 44 died on an average of 14 months after operation.

The clinical and pathologic data in relation to the development of gastric cancer or gastric ulcer are in close agreement: (1) with regard to the average

age at operation; (2) with regard to the average period of previous history suggestive of ulcer; and (3) with regard to the average number of months of acute history. Such an agreement of data from two independent studies of this series of cases is not accidental.

From a careful study of the clinical and pathologic evidence of this series of cases it seems probable that gastric cancer rarely develops except at the site of a previous ulcerative lesion of the mucosa.

HENRY J. VAN DEN BERG.

Küttner, H.: Surgery of the Stomach Based on One Thousand One Hundred Cases Treated in Seven Years (Zur Chirurgie des Magens auf Grund von 1,100 in 7 Jahren behandelten Fällen). Arch. f. klin. Chir., 1914, cv, 789.

By Surg., Gynec. & Obst.

Küttner states that 10 per cent of all his surgical work at Breslau in the last seven years has been on the stomach. In a total of 1,100 stomach cases twothirds were malignant and only 20 per cent of these were operable. The proportion of operable cases was lowest in patients who came from private practice. One woman had been in the hospital for a year on account of multiple cysts in the upper third of the femur, first on one side and then on the other. Autopsy showed that the cysts were metastases from a gastric cancer which had been entirely unsuspected, although the woman had been under supervision during all that time.

Malignant disease of the stomach at a distance from the pylorus causes achylia and mechanical conditions like those artificially induced by a gastroenterostomy. This explains why cancer of this kind can exist so long without attracting attention. In 15 per cent of Küttner's cancer cases there had been preceding stomach trouble, but whether gastritis, ulcer, or achylia is not known. In one case both a cancer and an ulcer were found in the stomach, and, in another, five or more separate cancers.

The operable cases generally had a longer history of disturbances than the inoperable ones. Röntgenoscopy was usually disappointing except when it revealed inoperable conditions. The Gluczinski method of differentiation proved reliable. The later the pain develops after eating, the nearer the

pylorus the lesion is found.

The author resects only when cancer cannot be excluded with absolute certainty; that is to say, he performs resection in every case of tumor-forming callous ulcer, as he is convinced that this ulcer is in reality of cancerous nature. The fear of transformation of other forms of gastric ulcer into cancer is not borne out by his experience; later in his 120 cases, there were only two in which cancer developed and the ulcer was of the callous type. Afterhæmorrhage from an ulcer treated by gastro-enterostomy was responsible for the death of one patient, and also for that of another treated by resection. Perforation did not occur after gastro-enterostomy in any instance and the ultimate outcome was a

complete cure of all disturbances in 65 per cent and essential improvement in 20 per cent. The results when the pylorus was excluded were no better than with gastro-enterostomy alone.

A. Goss.

Mayo, W. J.: The Radical Operation for Cancer of the Pyloric End of the Stomach. Surg., Gynec. & Obst., 1914, xix, 683. By Surg., Gynec. & Obst.

The most important reason for the apathetic attitude of the profession in regard to the cure of cancer of the stomach has been the impossibility of making a diagnosis sufficiently early for the performance of a radical operation with a reasonable operative mortality and a fair prospect of cure. Exploratory incisions, which up to within the past year were chiefly relied upon, are fortunately no longer required in anything like the percentage of cases in which they were formerly necessary. history of the patient, the radiographic and physical findings, and the use of the stomach tube today give a reasonable prospect of a correct early diagnosis. The laboratory test, so long depended on and which proved so fallacious a guide, has been justly relegated to a minor position, but it is of some value and should not be discarded.

These patients are usually poor risks; the operation is one which makes large demands on their resistance, and the margin between recovery and death is at best a narrow one; therefore, every effort should be made to improve the operative technique.

In the Mayo clinic in the last 15 years a number of the two-stage operations for cancer of the stomach have been made, and of these not one patient died as a result of the resection. Standing alone, this would seem to be a strong if not an absolute indication for the two-stage operation, but an examination of the facts concerning these cases leaves the indications less clear, since the cases were in a sense selected from a number of patients on whom a primary resection could have been made. and who were subjected to a gastro-enterostomy with the intention of following this procedure by a resection, but who for one reason or another never came to the radical operation. A few who were in a most serious condition died following the gastroenterostomy. They would of course have died if a primary resection had been made instead of a gastro-enterostomy, but the resection received the benefit so far as mortality statistics are concerned. Some of the patients, especially those with large ulcerating cancerous masses, did not sufficiently improve after gastro-enterostomy to enable them to submit to a second operation, again bettering the statistics of resection by the elimination. Following the gastro-enterostomy, a delay occasionally occurred before the second operation, as a result of various causes, which resulted in the vascularization of the adhesions which so often formed following the first operation and which became infected with carcinomatous cells.

Grafting in carcinoma of the stomach is exceedingly common, especially grafting to the peritoneum,

and the necessary handling of the growth, irritation of the peritoneum, and the injury inflicted by the performance of the gastro-enterostomy itself are all matters of importance in this connection.

The mortality depends more upon the cases which will be accepted for operation than upon any other factor. Some years the Mayo clinic has had mortalities following partial gastrectomies as low as 6 per cent; in other years, with an increasing experience and improved technique, a mortality of twice that or even more, due to the class of cases which were accepted for operation and which would previously have been subjected, if operated on at

all, to a palliative gastro-enterostomy.

It was with much interest, therefore, that the author investigated the method of Polya in which, after the excision is made, the end of the stomach is directly applied to the side of the jejunum, about 6 to 12 inches from its origin. This operation has some obvious advantages. It saves the time which is consumed in closing the end of the stomach, and in cases in which only a small pouch of the stomach is left is very much easier than performing an independent gastro-enterostomy. The Mayo clinic made a number of resections with this type of reunion with satisfaction, and the author predicts for this procedure a large field of usefulness if it does not become the method of choice.

Lippman, C. W.: The Duodenum: a Röntgenographic Study. Surg., Gynec. & Obst., 1914, xix, 724. By Surg., Gynec. & Obst.

Lippman introduces a new method of demonstrating the whole duodenum by blocking off the organ at the duodenojejunal flexure either with the hand or with a wooden spoon (Holzknecht). Surprisingly moderate pressure is necessary. The actual filling is done either by effleurage from the stomach, or for experimental purposes, with a modification of the Gross duodenal tube. The author divides the duodenum into four parts: bulbus, pars inferior, pars media, and pars superior.

The bulbus is demonstrable by ordinary fluoroscopic methods in persons weighing under 180 pounds, but for observation of the remainder of the duodenum, this method with effleurage is quickest and most convenient. The movability of the "fixed" duodenum—of the duodenum as a whole—is emphasized. It moves to a small extent with breathing and more markedly with retraction of the belly wall. The author's idea of the cause of this movability is expressed as follows: The peritoneum is applied to the internal body wall like the fabric of a man's vest to the external body wall. watch chain might represent the stomach fixed to the wall in two places, movable either with the fabric when the vest as a whole moves, or independent of the fabric by pushing up the center of the chain. The duodenum might be considered as a braid sewed upon the fabric and moving only with movements of the vest itself. The diaphragm and the liver together probably serve to tense the peritoneum and thus pull up all the abdominal organs, especially with forced expiration and con-

comitant retraction of the belly wall.

The duodenum is ordinarily seen as a C-shaped sausage-like tube with a smooth-walled pars superior and a pars media and pars inferior marked by their Kerkringian folds. The author shows a duodenal variant. The peristalsis in the normal duodenum starts just beyond the bulbus, the time of a complete peristole varying in the individual case from 5.5 to 7.5 seconds. The injection of 0.5 per cent hydrochloride is not an excitant of duodenal peristalsis.

The advantages claimed for these methods of filling the duodenum, with clamping off of the duodenojejunal flexure, are: (1) more complete filling of the duodenum with the exception of the bulbus, (2) observation of the peristalsis and the mobility of the duodenum fluoroscopically, (3) more exact determination of the location of the tenderpoints, (4) observation of niches and defects in the duodenal picture, (5) diagnosis and differentiation of duodenal adhesions or variants, (6) dislocation due to extraneous causes; e.g., pancreatic tumor.

Lippman believes that the ordinary examination in different positions of the body, the observation of Cole's duodenal defects fluoroscopically with the aid of the Bucky effect and efflurage with compression at the duodenojejunal flexure are the most practical methods for rendering duodenal diagnosis more perfect. The duodenal tube method of filling is only necessary in rare cases and was originally used for the sake of anatomical exactness.

### Vance, J.: Intussusception in Children. N. Mex. M. J., 1914, xiii, 45. By Surg., Gynec. & Obst.

Seven cases are reported. In one case the intussusception occurred in an inguinal hernia which contained the incarcerated bowel. This child made an easy recovery. The condition was probably produced by the use of castor oil. In three cases the diagnoses were made early and the patients immediately operated upon. All recovered. The other four cases died, in all of which the diagnosis was made late or the parents refused operation when it was first advised.

The following conclusions are reached by the

author:

The tender age of infancy, per se, is not a barrier to abdominal section.

Reduction of the intussusception by laparotomy, in competent hands, gives better results at all ages than any other methods.

When the physician is familiar with the condition, the diagnosis can and should be made, with rare

exceptions, within 17 hours of the onset.

When operation is performed within 17 hours of the onset the general mortality will not be over 10 per cent. When operated on by the best surgeons, the mortality will not be over 5 per cent with the same early diagnosis. No resections will be required in this class.

Late diagnosis and operation mean many resections and high mortality.

On account of its comparative rarity, intussusception, although clearly marked and easy of diagnosis, is more frequently overlooked and mismanaged than any other serious affection occurring within the abdomen. Edward L. Cornell.

## Wilkie, D. P. D.: Acute Appendicitis and Acute Appendicular Obstruction. Brit. M. J., 1914, ii, 959. By Surg., Gynec. & Obst.

The author offers a contribution in regard to the pathology of the early stages of acute appendicular Wilkie says that primary inflammation and primary obstruction of the appendix are clinical entities and as such should be differentiated. This was not possible years ago when it was customary for surgeons to have to deal with secondary effects of acute appendicular trouble. In acute appendicular obstruction there is sudden onset; pain may be constant or intermittent; vomiting is usual; tenderness over the appendix is present in greater or less degree. Here pulse and temperature are not dependable, but as a rule there is no appreciable increase in either. The bowels may act. The causes of this obstruction may be either fibrous stenosis of the appendix or acute kinking by a band or fold. Experiments were carried on, the ileum of the cat being used. A loop was formed by severing with the cautery the ileum 5 inches from the ileocæcal valve and invaginating this end of the loop. This was again cut one inch from the ileocæcal valve, invaginating this. The cut end of the ileum was then anastomosed to the cæcum. Observation showed that (1) the loop was empty except for mucus and bacteria; (2) it was filled with cæcal content-animal on carbohydrate diet; (3) it was filled with cæcal content-animal on rich protein diet; (4) it was filled with emulsion of bacteria grown from cæcal content. In the first group the animal may live; in the second the result is more serious but not especially rapid; but in the third a violent reaction ensues and the animal is usually dead in 20 hours; in the fourth, no violent reaction is seen, and if the animal be killed in 48 hours the loop presents an almost normal appearance.

Wilkie's conclusions are as follows:

r. Two acute pathological processes are met with in the vermiform appendix: acute appendicitis

and acute appendicular obstruction.

2. Clinically acute appendicitis is distinguished by the signs of inflammation, there being from the onset a rise in pulse and temperature. Acute appendicular obstruction gives rise to vomiting, colicky pain, and abdominal tenderness, but at the outset to no appreciable rise in pulse or temperature.

3. The changes occurring in an appendix the lumen of which is completely obstructed depend on the presence or absence of fæcal matter within its lumen.

4. In experimental obstruction in an artificial appendix the changes vary greatly according to

the nature of the diet of the animal previous to experiment, rich protein diet being associated with much more rapidly destructive changes than carbohydrate.

5. Undigested protein, putrefactive bacteria, and an alkaline reaction together produce rapid gangrene in the walls of the obstructed organ.

6. The prevalence of the severer forms of acute appendicular disease in western as contrasted with eastern people is probably to be explained by the animal diet indulged in by the former.

7. On the same lines may be explained the increasing frequency of such disease in large industrial areas and its relative frequency in the male M. S. HENDERSON.

## Gant, S. G.: Surgical Myxorrhœa Coli, Myxorrhœa Membranacea, and Myxorrhœa Colica-Membranous Enteritis and Colica Mucosa. Surg., Gynec. & Obst., 1914, xix, 704. By Surg., Gynec. & Obst.

Gant explains that myxorrhœa coli is a symptomcomplex characterized by constipation, abdominal pain, uneasiness or soreness, and the periodic evacuation of jelly-like strips or casts of tenacious mucus, on the one hand, or colic on the other, and he suggests that all mucous discharges be designated as myxorrhœa coli, with which understanding the former is called myxorrhœa membranacea and the latter myxorrhœa colica. He concedes that either type of myxorrhœa coli may be secondary to neurogenic disturbances, but strongly maintains that myxorrhœa membranacea and myxorrhœa colica are frequently produced by many other conditions and diseases, medical and surgical, several of which may be factors in the same case. He states that he has often known these conditions to be caused by psychic, neurogenic, gastrogenic, and enterogenic disturbances, adenoidism, thyroid disease, impaired metabolism, abnormal menstruation, affections of the heart, liver, and pancreas, inflammatory and ulcerative lesions (colitis), helminths, foreign bodies, prolonged or irritating colonoclysis, various lesions which induce chronic intestinal obstruction and lead to coprostasis and auto-intoxication and other ailments which cause the hypersecretion or retention of mucus. He has observed patients who suffered at first from myxorrhœa membranacea and later myxorrhœa colica where the mucus became inspissated, irritating and exciting enterospasm.

Gant maintains that the diagnosis is easy in uncomplicated cases and that myxorrhœa membranacea can be recognized by its symptomcomplex, obstinate constipation, uneasiness and soreness or pain in the lower left abdominal quadrant, and the periodic discharge of strips, casts, or jelly-like masses of mucus, and, that where subsequent to these manifestations and in the absence of signs pointing to intestinal obstruction from other causes, colic suddenly supervenes, one is justified in making a diagnosis of myxorrhœa colica.

The author discountenances a routine treatment in these cases and advises holding curative measures in abeyance until the acute symptoms subside. Usually he has succeeded in quickly freeing the colon of mucus, securing satisfactory movements. and alleviating abdominal soreness and colic by having the patient confine his diet to fluids, drink hot water, apply hot fomentations to the abdomen, and take daily two copious hot oil or saline injections which reinforced by the administration of bella-donna four times daily, measures which tend to allay intestinal irritation and muscular spasm, soothe the mucosa and clear the colon of scybala, offensive fluid fæces, mucus, and toxins. When these remedies fail, irritating collections of mucus are evacuated through the aid of a liberal dose of castor oil followed by enemata, or sigmoidoscopy. Von Noorden's coarse diet (cellulose) was found to be helpful where myxorrhœa coli was secondary to neurogenic disturbances, but aggravated the condition when caused by surgical lesions of the colon.

When myxorrhœa membranacea or colica was secondary to or complicated colitis, enemata of oil or emulsions alternating with 1 per cent ichthyol, potassium permanganate, or balsam of Peru were given; high irrigation proved effective when introduced by way of the anus or through an appendi-

costomy or cæcostomy opening.

The removal or correction of kinks, twists, strictures, invagination, adhesions, pericolic membranes, and other lesions obstructing the bowel or causing stasis, effected a cure in many of the author's cases, and he rarely found the bowel sufficiently incapacitated to require resection, exclusion, or the establishment of an artificial anus.

In conclusion Gant states that myxorrhœa membranacea and myxorrhœa colica are common affections and more frequently responded to surgical treatment than the literature of the subject would indicate.

### Lynch, J. M., and Draper, J. W.: Anastalsis and the Surgical Therapy of the Colon. Am. J. M. Sc., 1914, cxlviii, 828. By Surg., Gynec. & Obst.

The authors are convinced that there is a welldefined group in which constipation is due to preponderance of the anastaltic over the prostaltic colonic wave. This is easily shown by the rapid transfer of a bismuth enema from the rectum to the cæcum, and the return to the rectum of a portion of the mass, some remaining in the cæcum, with a resulting gradual accumulation at this point.

They are inclined to believe in the hypothesis of function transfer from colon to ileum rather than to presuppose that the colon never had any function save that of storing and distributing toxic material; therefore they do not believe in the removal of the colon. Furthermore, the immediate mortality following colectomy is considerable, also considering that the small gut possesses normally but one wave. the prostaltic. The authors have devised two methods of surgical treatment. An ileac segment is made

of proper length, near the cæcum, to reach comfortably from the cæcum to the sigmoid. The direction of this segment is then reversed in accordance with the "prostaltic wave law" of the small intestine, so that the proximal end is anastomosed with the cæcum, and the distal end parallel with the ileum for a short distance forming a "double-barrel" anastomosis; this is then anastomosed with the sigmoid. The material is in this way able to pass from the cæcum to the sigmoid, but cannot reverse its direction.

They also illustrate the interposition of a prostaltic ileac segment between two divided ends of the sigmoid to prevent reflux after the usual operation for ileosigmoidostomy. They show a third figure of ileosigmosigmoidostomy with an overlapping of sigmoid to block anastalsis.

HENRY J. VAN DEN BERG.

### LIVER, PANCREAS, AND SPLEEN

Nichols, H. J.: Observations on Experimental Typhoid Infection of the Gall-Bladder in the Rabbit. J. Exp. Med., 1914, xx, 573.

By Surg., Gynec. & Obst.

In recent years the question of immunity following antityphoid vaccination, the typhoid carrier problem, and the possibilities of chemotherapy have restimulated the investigation of experimental typhoid infections in lower animals. Therefore the author in this paper has considered the following subjects:

1. Pathogenicity of a living sensitized vaccine.

2. Pathogenicity of the first transplant from a living sensitized vaccine.

The regular production of lesions.

4. The gall-bladder lesion as a test of immunity.

The curative effects of vaccines.

6. The practical bearing of experimental work. In his experiments the author used ninety-seven animals, and forty gall-bladder lesions were observed. The experiments showed that typhoid bacilli can be isolated from the organs for some time after injection but that the gall-bladder lesion is the most persistent source. After intravenous injection the gall-bladder apparently becomes infected by way of the blood stream as well as from the bile. The result may be summarized as follows:

r. Besredka's living sensitized vaccine, given intravenously, does not produce a typhoid lesion of

the gall-bladder in the rabbit.

2. The first transplant of this vaccine is capable of producing this lesion; hence this vaccine is not

entirely safe to handle.

- 3. Regular infections of the gall-bladder have not been produced by carrying a known pathogenic strain on rabbit blood agar, by successive passage through animals, or by the use of freshly isolated
- 4. No evidence could be demonstrated in the rabbit of the immunity produced in man by vaccination with an entirely killed vaccine.

5. Vaccine treatment did not cure the gall-bladder lesion.

6. With the present methods of producing infections in the chimpanzee and the rabbit, neither of these animals is suitable for deciding the problems of the immunization of man by vaccines. These problems must be settled, as some of them already have been settled, by actual experience with large numbers of men kept under close observation.

GEORGE E. BEILBY.

Deaver, J. B.: The Surgical Treatment of Cholecystitis. Therapeut. Gaz., 1914, xxxviii, 778. By Surg., Gynec. & Obst.

In Deaver's experience, cases of cholecystitis, excepting the suppurating, gangrenous, and phlegmonous types, recover from the acute attack if properly handled. The patient should be kept in the sitting position; should have absolutely nothing by mouth in the presence of a localized or diffusing peritonitis until there is restoration of peristalsis; ice should be kept on the abdomen; a saline solution should be constantly used by the Murphy method; in the presence of vomiting, no medicine should be given but the stomach should be cleansed by lavage. This is also the line of treatment to be observed in acute cholecystitis occurring in typhoid fever. It is preferable to operation.

Operation is indicated in the graver forms of cholecystitis in the absence of diffusing peritonitis. In the presence of diffusing peritonitis, operation should be delayed until this has subsided, when the gall-bladder should be removed. The advantage of removal over drainage of the gall-bladder lies in the prevention of serious infection of the liver and pancreas. The question of the use of drainage, as against removal of the gall-bladder, is a very important one and should be governed by the amount of disease of the gall-bladder and the presence of enlarged lymph-glands along the common duct, especially the chain at the junction of the common duct and duodenum.

Chronic cholecystitis, with recurrent attacks, in the absence of other symptoms certainly warrants operative interference. Little faith should be placed in medicine or the treatment at various watering places. On the contrary, many more people would be benefited and there would be fewer cases of diabetes, chronic pancreatitis, and chronic liver disease if, instead of going to watering places, the patients would consent to an operation.

EDWARD L. CORNELL.

Clark, J. G.: Ultimate Results Secured from Surgical Intervention in Simple Cases of Cholelithiasis and in Cholelithiasis Discovered During Operations for Other Conditions. Am. J. M. Sc.; 1914, cxlviii, 625.

By Surg., Gynec. & Obst.

Clark reports 150 cases of gall-stones, nearly all of which gave some symptoms, contrary to the old teaching that in most cases they do not pro-

duce symptoms. Many excellent practitioners still exhibit a tendency to delay surgical intervention until the classic attack—terminal rather than initial indications—sets in. The author presents two groups of cases in tabular form: one of cholelithiasis alone, the other associated with gynecological conditions. He finds that less favorable results occur among the combined cases, with the ratio of cures in direct proportion to the severity of symptoms. The weight of evidence emphatically favors the early removal of gall-stones, also the removal of gall-stones associated with abdominal or gynecological lesions, unless contra-indicated because of the condition of the patient, the nature of the operation, the septic condition of the primary operation, etc. Of this group of cases there were 6 deaths, 4 of which were directly due to the destructive results of advanced cholelithiasis, as advanced pancreatitis and cholæmia; the other two died of infection indirectly as a result of the operation. In none of the combined operations in which there were no symptoms attributable to gall-stones did a fatality occur.

Symptoms referable to the upper abdomen in conjunction with gynecological lesions are usually due to gall-bladder pathology, rarely to gastric or duodenal ulcers—in the author's cases in the ratio of 100 to 1. Appendiceal involvement, however, is not such an infrequent factor in symptoms of the

upper abdomen.

Clark has little faith in the belief that reflex symptoms in the upper abdomen emanate from gynecological lesions, but believes in locating the symptoms anatomically and then seeking for the

lesion in that locality.

From a review of his series of cases he concludes that simple drainage is sufficient in cases of cholelithiasis in which there are no symptoms indicating the presence of stones. In all other cases, however, in which the gall-bladder is thickened or greatly dilated, or if it is the seat of the so-called "strawberry change," cholecystectomy should be the operation of choice. He emphasizes that mere drainage does not, as was formerly believed, cure every case of cholecystitis.

HENRY J. VAN DEN BERG.

Cannaday, J. E.: Spontaneous Rupture of the Tubercular Spices.

Ass., Asheville, 1914, Dec.

By Surg., Gynec. & Obst. Tubercular Spleen. Tr. South. Surg. & Gynec.

Primary tuberculosis of the spleen is an unusual condition, and when it does exist is seldom diagnosed in time to secure satisfactory operative results. A few surgeons have removed the spleen for primary tuberculosis, and the results when the operation has been done at all early have been very gratifying. A careful search of surgical literature brings to light only one previously reported case of spontaneous rupture of the tubercular spleen—that reported by Aufrecht, which was found post-mortem.

Cannaday reports a case of tubercular spleen

which ruptured spontaneously and was treated operatively by splenectomy. The rent in the spleen was 7 cm. in length and 1.5 cm. in thickness at its deepest part. The tail of the pancreas was slightly adherent to the spleen and there were a few dark clots showing a previous rupture under the capsule. There were a number of caseous masses in the spleen. The patient made a fair operative recovery and died later of renal tuberculosis.

Minot, G. R.: Nitrogen Metabolism before and after Splenectomy in a Case of Pernicious Anæmia. Bull. Johns Hopkins Hosp., 1914, XXV, By Surg., Gynec. & Obst.

The author describes a case of pernicious anæmia which had showed no improvement for three months. After splenectomy there followed an improvement in the blood picture and general condition. Before operation there was a loss of 0.78 gr. daily in the nitrogen output; whereas, following operation there was an average retention of 0.6 gr. He suggests the following possible causes for this difference:

1. Removal of toxic causes of loss of nitrogen.

2. Slight fever before operation.

3. The patient may have been in Rosenquist's period of nitrogen loss before operation, and after-

ward in a period of retention.

He also finds the urea output low before operation which he suggests may be due either to deranged liver function, or to anæmia as suggested by Padoa. No change was noticed in the ammonia of the urine. Urobilinogen which was present before operation disappeared after the operation.

HENRY J. VAN DEN BERG.

Graf, P.: Surgical Treatment of Hæmolytic Icterus (Zur chirurgischen Therapie des hämolytischen Ikterus). Deutsche Ztschr. f. Chir., 1914, cxxx, 462. By Surg., Gynec. & Obst.

The surgical treatment of hæmolytic icterus consists, of course, in the removal of the spleen. Graf comments on the familial character of this disease and the absence of demonstrable bile pigment in the urine while it is present in the blood. The second generation feels the effects more severely than the first generation affected. Some are born with the jaundiced tint; others develop it later. Hæmolytic jaundice differs from Banti's disease chiefly in its familial character and the exceptional fragility of the red blood corpuscles. In Banti's disease the jaundice stage is comparatively brief.

He reports the case of a family with 13 living children in which the father and six of the younger children presented the typical syndrome of hæmolytic icterus. The enlargement of the spleen preceded the jaundice by several months and the general health fluctuated with the size of the spleen. The two girls who seemed most seriously affected were treated by splenectomy with great benefit.

The spleen was removed also from a man of 38 with typical hæmolytic jaundice. The family history in this case was not known, but the jaundice had been noticed for nine years. The results a year later in these cases show the value of splenectomy in hæmolytic jaundice in adults. In a girl of 12 the red cells have increased to almost seven million and time alone will tell how the child is going to bear this polycythæmia. Splenectomy, therefore, should not be advised for a child unless severe disturbances make it necessary. A. Goss.

### MISCELLANEOUS

Fobes, J. H.: Personal Observations upon the Value of Pain Symptoms and Tenderness-Touch Diagnosis of the Abdominal Organs. *Chironian*, 1914, xxxi, 108. By Surg., Gynec. & Obst.

The author has found that touch diagnosis has been of great service in bringing out lesions of the various organs concerned. For instance, in eliciting gall-bladder troubles, a line is drawn from the ensiform cartilage to the anterior superior spine of the ilium; then another line is drawn from the cartilage of the ninth rib to the navel. Where these lines cross, percussion is made with the bent middle finger.

In perforated gastric ulcer the peculiar burning pain over the gastric area quickly following a perforation, followed by excessive rigidity and extreme tenderness is distinctive. Soon the pain and tenderness radiate to the lower right quadrant as the gastric contents pass down between the omentum and anterior abdominal peritoneum. While gastric ulcer usually perforates anteriorly, duodenal ulcer usually perforates posteriorly. For this reason and because the chemical reaction of the contents is mostly alkaline, perforation of the duodenum is not associated with such severe symptoms; in fact, the condition may be confused with appendicitis.

EUGENE CARY.

### SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Ostheimer, M.: Fragilitas Ossium. J. Am. M. Ass., 1914, lxiii, 1996. By Surg., Gynec. & Obst.

This disease is known by many names, such as "idiopathic osteopsathyrosis," "osteogenesis imperfecta," "dysplasie periostale," and "achondroplasia," all signifying multiple fractures occurring before birth, at birth, and after birth. The author has used the term fragilitas ossium to include (1), the fœtal type found at or soon after birth, associated with imperfect bone formation and multiple fractures, the cases rarely surviving their second year; and (2) the congenital type found in children at birth or later with recurrent fractures even in early adult life, the patient surviving the disease but being left in a badly crippled condition.

The condition is more common in males than in females; the greatest number of fractures occurs between the ages of 1 and 3 years, a small percentage being reported up to 41 years of age—the femur being the common seat of fracture. The bony pathology shows a lack of formative power, the bone trabeculæ being produced by calcification of cartilage cells; metaplasia of cartilage is greater than normal, while bone deposition is less; the periosteal bone is abnormally thickened and incomplete.

Few osteoblasts are found; a deficiency of calcium salts is also noted. The length of the bones is normal but their thickness is less than normal. Various writers agree that this disease is unlike rickets and the etiology is unknown. Most agree that a faulty metabolism exists in the mother during pregnancy.

Treatment other than absolute rest of the patient and immobilization of the affected bone and good hygiene has little or no effect on the disease. One case reported by the author shows all the head measurements below normal.

H. W. Maltby.

Schmerz, H.: Heliotherapy of Surgical Tuberculosis (Die Heliotherapie der chirurgischen Tuberkulose in der Ebene). Beitr. z. klin. Chir., 1914, xciv, 381. By Surg., Gynec. & Obst.

Heliotherapy represents the optimum of climatotherapy. The sunlight treatment of surgical tuberculosis, which has given the best results in mountainous districts and on the seashore, gives satisfactory results also on the plains and even in large cities. Heliotherapy should form the basis of all treatment of cases of surgical tuberculosis in the lowlands as well as in the cities. A satisfactory explanation of the effect of sunlight on the human body in healthy and diseased conditions cannot be given at the present time in the absence of extensive experimental research. The effect of solar energy on tuberculous tissue and the rôle played by the resulting cutaneous pigment cannot be definitely explained.

Schmerz reports in detail the sunlight treatment of 34 cases of surgical tuberculosis, principally of the bones, joints, glands, and skin. Eleven were cured, 19 improved, and 4 died. The results were not as brilliant as those reported by Rollier in the highlands, but they were in the main very satisfactory. Supportive measures are indicated, as proper diet, iron, arsenic, and in the cooler seasons codliver oil with phosphorus. Freund's radiotherapy of surgical tuberculosis should also be used in appropriate cases. Finally, surgical and orthopedic measures should be undertaken where indicated. Schmerz urges the erection of special sanitaria for the sunlight treatment of surgical tuberculosis.

E. P. ZEISLER.

Keppler, W., and Erkes, F.: Treatment of Tuberculous Foci in the Neck of the Femur (Ein Beitrag zur Behandlung der tuberkulösen Knochenherde in Schenkelhals). Arch. f. klin. Chir., 1914, cv, 529. By Surg., Gynec. & Obst.

From a study of their own cases and those reported in the literature the authors come to the

following conclusions:

r. Operative removal of the tuberculous focus is to be preferred to the conservative methods hitherto used if (a) the focus is solitary and the joint free; (b) if the focus is solitary and there is sympathetic, not specific, involvement of the joint; (c) if the focus is perforated and there is secondary involvement of the joint in the form of a mild synovitis.

2. If the focus is perforated and there is severe destructive involvement of the joint, conservative treatment or resection should be chosen, depending on the case. No sharp boundary line can be drawn between the mild and severe cases, and the surgeon

must decide in each case.

3. The advantages of operative removal are that the disease is shortened and the danger of perforation

into the joint is removed.

There are two methods of operation: (1) curetting out the focus by boring through the neck at the trochanter, and (2) removal of the focus by opening the joint anteriorally by Lücke-Schede's method. The first is to be recommended if the focus is near the trochanter, if there is an abscess or fistula in the trochanter region, or if the joint is free. The second is preferable if the focus is near the apex of the neck, if there are abscesses or fistulæ anteriorally, or if the joint is involved. The dangers of opening the joint are not so great as might be supposed. advantages are (1) that it is a complete, radical operation; (2) it gives the surgeon a free hand if he finds the pathological changes more extensive than he had suspected; and (3) it seems to follow the path indicated by nature, as abscesses and fistulæ so frequently open anteriorally. The coxa vara that sometimes appears as the result of the operation or the slow regeneration of bone may be avoided by keeping the leg in a plaster cast for a long time.

Six cases are described in detail and are illustrated with 20 röntgen pictures. The article is followed by an extensive bibliography.

A. Goss.

Skillern, Jr., P. G.: Certain Minute Cysts of the Metacarpal Bones Following Trauma; Their Clinical Recognition. J. Am. M. Ass., 1914, lxiii, 2272. By Surg., Gynec. & Obst.

Cysts of the short bones of the extremities have received little or no attention. The author describes two cases following trauma. Both were about the size of a pea and were difficult to locate by X-ray. One was in the head and the other in the base of a metacarpal. There was no enlargement of the bone and no signs of inflammation. Pain was persistent, and there was tenderness of a wincing character, which simulated that of a subperiosteal fracture, and for which the first case was at first mistaken.

There was the clinical picture of a chipping fracture with lingering signs, because untreated.

Operation relieved the symptoms at once.

The author believes that they were very early cases. He does not offer any observations as to the pathology, but says the slight trauma was sufficient to cause fractures of the delicate normal bone trabeculæ, producing effusion, hæmorrhage, and interference with nutrition, thereby setting up a localized osteomyelitis. The pigments of the blood were absorbed, leaving clear contents, just as occurs in cysts of soft tissues.

The author offers the following conclusions:

r. Cysts of bone should be detected in their incipient stages before extensive destruction of the medulla has taken place.

2. Early operation results in prompt cure and prevents deformities and extensive bone plastics.

3. A localized trauma followed by persistent but not severe pain and localized but not true "wincing" tenderness—symptoms and signs of an untreated "chipping" fracture—should arouse clinical suspicion of a minute early bone cyst, the corroboration of which may be afforded by close scrutiny of a röntgenogram at the site corresponding to that of the localized tenderness.

ARCHER O'REILLY.

Nicoll, H. K.: The Use of Antistreptococcus Serum in Chronic Arthritis. J. Am. M. Ass., 1914, lxiii, 2225. By Surg., Gynec. & Obst.

The serum used, a horse serum, was prepared with a polyvalent specificity, an attempt being made to take advantage of the passive immunization to increase the opsonic index. Varying doses of 20 to 30 ccm. were administered, but anaphylaxis in some made it advisable to use gradual increasing successive doses of 2, 6, 8, 10, and 12 ccm. given more frequently.

The administration was given subcutaneously in the scapular region. A large needle was used and every effort made to avoid possible injection into the veins. Twenty cases, ranging from 22 to 56 years of age, all having polyarticular involvement, were treated. Vaccines, autogenous if possible, were used with the serum and found to act comple-

mentary to it.

Some few patients experienced anaphylactic shock, but the greatest discomfort was urticaria with some herpis about the site of injection. The injection given during the declining stage of opsonin was more likely to be followed by anaphylaxis. The conclusions are:

 The administration of horse serum may be followed by anaphylaxis in 25 per cent of cases.

2. Heating and aging of serum fails to remove its

toxicity.

3. An estimation of the immune bodies showed no advantage over the use of antiserums of less potency commercially prepared. Acute streptococcus infections occurred in 2 cases.

4. Concentrated serums were not successful.

5. The use of antistreptococcus serum in the treatment of chronic arthritis is neither advisable nor justifiable. H. W. MALTBY.

### FRACTURES AND DISLOCATIONS

Winslow, N.: Intra-Articular Fracture Fixation; Report of Two Cases. Maryland M. J., 1914, By Surg., Gynec. & Obst. lvii, 280.

The author reports two cases of intra-articular fracture fixation by means of wire nails. The first was a fracture through the head and anatomical neck of the humerus in an adult, and the second a separation of the lower humeral epiphysis in a child three years of age. In each case the joint was opened and approximation of the fragments was secured by nailing. He believes that all intra-articular fractures, which cannot be handled otherwise, should be screwed or pegged from the articular surface. ARTHUR J. DAVIDSON.

Hawley, G. W.: Ununited Fractures, with a Study of Bone Repair. Am. J. Orth. Surg., 1914, xii, 245. By Surg., Gynec. & Obst.

The extraordinary reparative power of bone is well stated in the expression that "fractures unite with treatment, without treatment, and in spite of different methods of treatment." The process of repair in bone differs from that of other tissues only in that the cells which effect the repair have the property of depositing calcium salts. The hæmorrage incident to a fracture and common to all ruptures of tissue is the first step in healing. On the framework of the fibrin clot which bridges between the two fragments the new tissue grows and the specialized cells lay down the lime salts. Some of the author's conclusions from an experience with 53 cases of non-union out of 1,200 fractures are:

Accurate approximation is the best prevention of

imperfect union.

Excessive hæmorrage interferes with the repair. The periosteum protects the inside repair from intrusion of connective-tissue growth from without.

The importance of coincident disease, as syphilis and malignancy, in preventing union has been ex-

Freshening the edges, injections of chemical irri-

tants, and massage are not indicated.

Bone-transplantation is the operation of choice. Of 53 cases, 31, 74 per cent, were cured by simple methods. Fifteen were operated upon. Conservative treatment consists in reimmobilization and, where possible, weight bearing. In the latter procedure the object sought is to stimulate calcium deposit by function and not to produce the socalled friction of fragments. Of the 15 operative cases plates were used in 6, bone-grafts in 6, screws in 2, and merely freshening of edges in one. In these 53 cases no failure of union in an infected compound fracture was observed. Out of 8 cases of fracture in carcinoma of the bone, only one failed to unite. W. A. CLARK.

Waegner, K.: Fractures of the Diaphysis of the Femur (Die Frakturen der Femurdiaphyse). Dissertation, Charkov, 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In the course of 6 years Waegner has observed 863 fractures at his institute. Of this number 651 were fractures of the extremities, among them 117 of the femur, 03 being simple fractures of the diaphysis. The latter form the material for the author's monograph. Seventy-two pages are devoted to a discussion of the anatomical side of the question, and from the literature and his own experience he comes to the conclusion that transverse and spiral fractures are most frequent and the primary dislocation of the fragments is caused by the mechanism of the trauma. The process of healing is exhaustively discussed, and he finds that if the röntgen picture shows a diastasis between the fragments it indicates that there is interposition of muscle and in such cases the possibility of a pseudarthrosis must always be borne in mind.

In the last chapter he discusses the treatment of fracture of the femur. First he takes up the ambulatory treatment of these fractures by Wolkowitsch's method and decides that it is inadequate; on the basis of 11 years' use of von Bruns' splint he designates the results of this treatment as mediocre. Codivilla and Dollinger's methods are also rejected. Passing to extension methods, which he thinks are the only justifiable ones, he discusses Zuppinger's splint first. From his own experience he finds that the correction of lateral dislocation is difficult, especially that of the dorsal lower fragment; other-

wise he thinks the method is a good one.

After discussing Henschen, Hennequin, Heusner, and Vorschütz's splints, Bardenheuer's method, which he thinks is of great importance, is described in detail. The experience of the medico-mechanical institute with Steinmann's nail extension is thoroughly reviewed. He reports 59 cases of nail extension in which there were no complications, either suppuration or fistulæ. He is an ardent advocate of Steinmann's method for the following indications: (1) all fractures of the femur with great dislocation; (2) fractures near the trochanters; (3) old and incorrectly healed fractures; (4) operative fractures with great dislocation in the long axis; (5) all cases in which changes in the skin seem to contra-indicate the use of plaster. In general, he is better pleased with the Steinmann method than with any other method of extension.

Hessing's apparatus is considered of value in the treatment of recent fractures and as indicated in old fractures that do not show a tendency to heal well. Operation is indicated if non-operative methods fail and also in pseudarthroses. The clamp method and Lane's plates are deserving of consideration. From the material of the institute the following figures are given: Steinmann's method was used 50 times, combined in 21 cases with operation. Among the cases in which the nails were used 6 were afterwards operated upon — 2 clamps, 2 Lane

plates, 2 wedges. If we add the 7 cases which were previously treated by Bardenheuer's extension, and in which consolidation could not be attained and which had to be operated upon, we have a total of 13 cases of operative union of the fragments, among which there was one death from shock two hours

after the operation.

In general, the treatment of fractures in the Charkov Institute is by Lucas-Championnière's device, in which the chief point is the movement by which the leg is brought into a semiflexed position. Immobilization is harmful. Extension is continued for 10 weeks, at the end of the twelfth week the patient gets up, and for four more weeks goes on crutches.

## Andrews, J. W.: Intrascapular Fracture of the Femur. St. Paul M. J., 1914, xvi, 650. By Surg., Gynec. & Obst.

Andrews in discussing this injury urges the necessity of a careful examination in intracapsular fracture of the femur in order to make a correct diagnosis. He believes such an examination is best made with the patient lying flat on the back on a hard table or the floor. Inspection in this position when the fracture is not impacted will elicit shortening of the limb, eversion of the toes, and inability of the patient to lift the heel from the table. Dislocation upward and backward will produce inversion instead of eversion; dislocation forward into the obturator space, eversion and shortening, sometimes lengthening. Crepitus should be looked for and the X-ray used when possible. This fracture occurs in the young and middle-aged as well as in the aged.

Treatment is considered under three heads. The "do-nothing treatment," which consists in putting the person to bed and building up the patient's strength, is advised in old people. Buck's extension is advised against, because it does not secure good apposition and, as a rule, results in shortening and impaired motion at the hip. Andrews considers the Ruth-Maxwell abduction and traction treatment very efficient and advocates its use strongly. The open treatment, securing the ends with wire, nail, or other mechanical means, gives the best result according to Andrews, but should only be used by a skilled surgeon, under conditions where perfect asepsis can be secured. Frank D. Dickson.

#### Burnham, A. C.: Compression Fracture of the Upper Extremity of the Tibia. Med. Rec., By Surg., Gynec. & Obst. 1914, lxxxvi, 1004.

The author reviews the literature and reports a

case of this type of fracture.

The causes of the fracture, briefly stated, are a fall with the patient striking upon the feet with knees extended, the force of gravity acting through the femur on the tibia driving the inferior surface of the internal condyle of the femur against the superior surface of the internal tuberosity of the tibia and breaking it off.

Again, if the patient has genu valgum or if force is obliquely applied the external tuberosity of the tibia is broken off. The muscular action of the biceps muscle upon the fibula acting upon the outer tuberosity may be an added element.

A few cases may be caused by forced abduction or adduction of the knee without a fall upon the feet, the condyle of the femur being driven into the head of the tibia and a tuberosity broken off before

the crucial ligaments are ruptured.

The symptoms are those of severe trauma to the knee, swelling, ecchymosis, crepitus hæmarthrosis, increased mobility away from the injured

The fracture is usually anteroposterior, midway between the attachment of the crucial ligaments and the lateral margin of bone, and passes down on the side of the tibia about two inches from the articular surface.

The treatment consists in the application of a lateral splint or cast with the parts in the best possible position, light massage, and passive motion after four weeks. The patient is usually up and bearing weight in six or eight weeks.

Operative methods with fixation of the parts by nails or plates is theoretically dangerous and in

the cases published unsatisfactory.

Prognosis for complete return of function is poor, but as a rule a useful limb is obtained.

The return of normal function is very slow, and the knee-joint in most cases has more or less permanent disability. C. C. CHATTERTON.

### Henderson, M. S.: Transplantation of Bone in Ununited Fractures. J.-Lancet, 1914, xxxiv, 615. By Surg., Gynec. & Obst.

The transplantation of bone in treatment of fractures is comparatively new and has not entirely supplanted the metal plate. The plate is thought to be more suitable for old ununited femurs, because the operation can be done in a shorter time and shock thereby avoided. The inlay is to be preferred to the medullary graft because the bone in an inlay is in normal environment, cortex to cortex, whereas the medullary graft is more or less of a foreign body. A graft should be placed in as vascular an area as possible, in a field normal to itself, and with good contact. Asepsis is very desirable though not absolutely necessary, as good results have been attained in spite of infection. Grafts from the same individual are better than those from another. The periosteum is to be considered as a limiting membrane which furnishes nourishment.

The author's conclusions are based upon a study of 32 cases, 4 of which are reported in detail. In one case a firm union was obtained in an ununited fracture of the humerus of thirteen years' standing by a combination of a medullary splint and an inlay graft. In two cases of fracture of the neck of the femur with non-union, spike grafts failed, presumably because fixation was maintained only six weeks, which was not long enough. W. A. CLARK.

Steinke, C. R.: Recent Traumatic Dislocations of the Hip. Ann. Surg., Phila., 1914, lx, 617.

By Surg., Gynec. & Obst.

From 1905 to 1914 at the Episcopal Hospital of Philadelphia there were only 10 cases of recent traumatic dislocation of the hip out of 23,000 surgical cases, 6,000 of which were classified as surgical injuries, thus showing but I dislocation of the hip in every 600 surgical injuries.

In the above series the author has summarized

the entire conditions and end-results.

There were o males and I female, the ages ranging from 10 to 61 years; the time in the hospital varied

from 3 to 47 days.

The types of dislocation were: 2 cases of anterior, one each of pubic and thyroid variety; 8 cases of posterior dislocation, 4 being iliac or high; 2 sciatic; 2 simply posterior. Thus the posterior variety was shown to be the most common. Reduction was done by the Stimson method once, the indirect method once, circumduction twice, and the direct method six times. The after-treatment varied, 4 cases simply being kept in bed, 2 were treated by Buck's extension, the remaining 4 cases had sandbags applied to either side of the leg. The endresults of this series of cases covering a period of 2 months to 4 years following reduction showed 6 with no disability whatever, I had numbness and partial paralysis due to nerve injury and fracture of the pelvis as well as dislocation of the hip, I patient died of fractured skull while in the hospital, and the remaining 2 could not be traced.

The conclusions are that simple luxation of a hip properly reduced gives no permanent impairment.

H. W. MALTBY.

### Chisholm, M.: Injuries of the Foot; a New Method of Reducing Dislocation of the Big Toe. Canad. M. Ass. J., 1914, iv, 1081.

By Surg., Gynec. & Obst.

The author discusses briefly a few injuries and gangrene of the foot. The anatomy and mechanism with the deformities and disabilities due to ignorance, fashion, occupation, and accident are spoken The theory he advances is that many static foot troubles may be prevented by the wearing of good shoes with heels coming well forward, especially on the outer side. He also thinks the head of the metatarsal in hallus valgus should not be removed entire, only the inner side of it being pared off to let the toe come back straight. In dislocation of the big toe, cutting the extensor in such a manner as to permit suturing it was resorted to in reducing the swelling which had been produced by the manipulations in three previous futile attempts.

Two cases of compound fracture of the ankle are cited in which splendid results were obtained by the free use of iodine before applying splints. amputating the toe, the author saved two cases which had beginning gangrene; one had hard arteries, the other Bright's disease and diabetes. Healing was obtained by using mild electric stimu-

lation produced by putting a copper disc on a vinegarsoaked blotter placed on the knee, an insulated copper wire leading to a silver disc which was bandaged against the amputation stump. Indolent ulcers also do well treated in this way.

C. A. STONE.

### SURGERY OF THE BONES, JOINTS, ETC.

Bayer, C.: Method of Filling Cavities After Bone Operations (Zur Abkürzung des Heilungsdauer nach ausgedehnten Nekrotomien). Jahrb. f. Kinderh., 1014, lxxx, 560. By Surg., Gynec. & Obst.

Bayer discusses the various methods that have been adopted for filling bone cavities after operation, and concludes that the simplest and best way is to trim the sides and edges of the cavity so that it will form as smooth and uniform a trough as possible, and then fold in the skin and periosteum to fill it. A roll of iodoform gauze, sutured over the wound, exercises pressure on the skin and periosteum flap and causes it to adapt itself more accurately to the cavity. It also aids in hæmostasis. A compression bandage is placed over this and left in place for two weeks. The periosteum rapidly forms new bone to fill in the cavity. How completely this is done is shown by five illustrations from typical cases. The time required for healing is reduced to about half of what it is with ordinary tamponing or other modes of treatment.

A. Goss.

## Ashhurst, A. P. C.: Cinematoplastic Amputations. Ann. Surg., Phila., 1914, lx, 750. By Surg., Gynec. & Obst.

The author does not believe that amputations for cinematic prosthesis, according to the method of Vanghetti, has received adequate attention in this country, nor does he believe that the ordinary artificial arm is adequate for the needs of the working man.

Ashhurst describes the technique of the operation. A skin-flap the diameter of the arm at the point of amputation and about an inch wide is made over the brachial vessels on the inner surface of the arm. This is lifted with the subcutaneous tissue and the brachial vessels sutured above the end of the flap. The nerves are also cut at this level, care being taken not to injure the nerve supply of the muscles. A longitudinal incision is then made on the outer surface of the arm, and the flexor and extensor muscles are separated and raised from the bone with the skin attached. The bone is cut off at the upper level of the incision, and the small flap is laid over the bone and sutured to the skin on the outer surface. The skin on the muscle-flaps is sewed about this in the shape of a cuff; the ends of the biceps and triceps are then sutured together in the form of a loop, and a large rubber tube is placed in the opening. Allowance must be made for shrinkage of the flaps.

In both the cases reported useful stumps were

secured with considerable power; but at the time of reporting the cases the author had been unable to secure a suitable prosthesis.

Archer O'Reilly.

### Buerger, L.: Tenoplasty for Ischemic Contracture. Internat. J. Surg., 1914, xxvii, 406.

By Surg., Gynec. & Obst.

Buerger reports that the literature endeavors to show that attempts to ameliorate deformities of Volkmann's contracture have yielded poor results at best. He has recently had considerable success in the treatment of this condition by plastic operation on the tendons and reports a successful case.

A boy 8 years of age, admitted to the Mount Sinai Hospital July 10, 1914, presented the typical claw-hand deformity following a fracture of both the radius and ulna in the upper third of the forearm. The injury was sustained seven months previously, and the fracture had been put up in a cast which remained in place for five weeks, after which it was noticed that the fingers were immobile, deformed, that there were a number of sloughing areas near the wrist and thumb, and that the condition became progressively worse, so that upon admission to the hospital active extension at the wrist was nil, and there was practically no motion of the thumb or of the fingers, all of these being intensely flexed. An incision 3.5 inches long was made over the middle of the wrist and forearm; the median nerve was exposed and liberated from dense adhesions; the superficial and deep flexor tendons of the second, third, fourth, and fifth fingers were freed, as well as the palmaris longus. All of these muscles were lengthened in the typical plastic manner by a splitting incision about 1.5 to 2 inches long, the tendons were covered with Cargyle membrane, and the fingers dressed in forced extension with a posterior splint.

The result was excellent, primary union being obtained, and five weeks after the operation flexion

and extension were excellent.

A second operation was done to free the thumb, the technique being the same as for the other fingers, the result also being excellent.

### Phillips, C. E.: Syndesmorrhaphy and Syndesmoplasty; the Operative Treatment of Ruptured Ligaments. Surg., Gynec. & Obst., 1914, xix, 729. By Surg., Gynec. & Obst.

Two new words are coined from the Greek word syndesmos, signifying the science of ligaments.

1. By syndesmorrhaphy is meant the simple suture or repair of ligaments.

2. Syndesmoplasty means a plastic operation on

a ligament

The subject of ruptured ligaments does not receive the attention its importance warrants. In fractures the broken bones tend to overlap and the process of repair is usually prompt and sufficient. In ruptured ligaments, however, the torn ends tend to retract, and in addition the process of repair is

very feeble; hence the necessity for good approximation. Disability varies in proportion to the importance of the ligament broken and the amount of separation of the ends. A more careful examination should be made in the cases of severe sprains to determine the presence of ruptured ligaments. In many cases it may be necessary to make the examination under anæsthesia. When an abnormal mobility is demonstrated after the acute symptoms have subsided operative measures should be resorted to.

Rupture of the ligaments of the acromioclavicular joint is treated by the insertion of a mattress suture of silver wire. Ruptures of the ligaments of the knee are easily demonstrated and are treated by simple suture or by a syndesmoplastic operation. The internal lateral ligament may be reinforced by means of superimposing on it the tendon of the gracilis muscle. Other ligaments may require a transplantation of the ligamentous structures.

Operative conditions of the ligaments exist in

the following cases:

1. In frank injuries where there is reasonable grounds for suspecting a completely ruptured ligament.

2. In old sprains where after the lapse of one or two months there is distinct abnormal mobility.

3. In cases of recurring sprains leading to frequent disabilities.

4. In compound sprains or compound dislocations an immediate or a late repair should never be omitted if there is a complete rupture of the ligaments and impairment of function.

## Trethowan, W. H.: Manipulative Methods of Treatment in the Surgery of Bones and Joints. Guy's Hosp. Gaz., 1914, xxviii, 490.

By Surg., Gynec. & Obst.

The author discusses the general principles of manipulative or non-operative procedures, their indications in surgical practice, and their relationship to open operations.

Manipulative procedures are divided into two

classes:

1. Gradual movements, active and passive.

2. Forcible movements under anæsthesia.

The latter if carried to the limits of normal motion at one sitting should be followed by vigorous active and passive motion. If complete correction of the existing deformity is not possible in one sitting, the limb is put up in the best possible position and the process repeated at suitable intervals. Plaster splints are best suited for this purpose. A few misapprehensions may be removed regarding the use of plaster fixation:

No healthy joint becomes stiff and ankylosed by fixation; and the danger of muscular atrophy is exaggerated in proportion to the advantages obtained. The atrophy, moreover, may be avoided to a great extent by the use of removable plaster

splints.

Emphasis is laid on the need of greater care in the

after-treatment of sprains and fractures about joints. As much care should be devoted to secure perfect function as to the preliminary repair of the damaged structure.

The muscular balance about a joint deserves special consideration. The "middle positions" of ease assumed in acute inflammations frequently lead to contractures, resulting in a disturbance of this balance and limitation of movement. The treatment of such contractures must vary with the age of the deformity, its severity, and whether the joint is or is not the seat of old inflammation. Tenotomy alone is rarely sufficient because all the soft structures of the joints are affected. Overcorrection of the deformity should be striven for to avoid danger of recurrence.

There is a skeletal as well as a muscular balance. It has been said that one-third of all pain to which the human body is subject is due to gross mechanical causes and can be relieved by mechanical procedures. Attention is called to the so-called traumatic arthritis, such as is seen in the anklejoint after an incompletely reduced fracture at the lower end of the tibia and fibula or in the villous arthritis of the knees which may follow an old knock-knee. Pronation of the feet is frequently responsible for malalignment of the skeleton. Pain results from the effort to maintain efficiency in spite of faulty mechanics.

In cases of malunion forced manipulation under anæsthesia will be successful many times, even several months after the fracture. Later, open operation will be necessary. After sprains adhesions are frequently responsible for pain and limitation. Many of these are extra-articular, especially in the shoulder, and should be broken up if possible.

Many other valuable hints in the management of acquired deformity are given. F. J. GAENSLEN.

# Elliott, G. R.: The Operative Treatment of Contracted and Deformed Hands in Multiple Arthritis. N. Y. M. J., 1914, c, 957. By Surg., Gynec. & Obst.

Although it is a time-honored dictum that diseased joints should be allowed to rest, the author offers a radical operative treatment for non-tuberculous joints. However, if such treatment is undertaken for joints in active process of disease, or if the aftertreatment is not properly carried out, the results will be bad. The delicately balanced mechanism of the hand, which maintains the fingers poised between extension and flexion, is easily disturbed by the processes of multiple arthritis. The restoration of a hand to its normal shape and function is a striking accomplishment. The operative technique consists in reduction with or without incisions. This is done under general anæsthesia, the deformities being overcorrected and the hand and fingers placed in splints which will maintain the overcorrection for two weeks. The pain is frequently severe for the first three or four days and may need to be controlled by morphine or by a local application of

aconite, belladonna, and glycerine applied on gauze bandages. This treatment has not caused an exacerbation of the disease in any case. The author reports his first three cases in which there have been no relapses after two years.

W. A. Clark.

### ORTHOPEDICS IN GENERAL

## Osgood, R. B.: The Relation of Posture and Intestinal Derangements to Coxitis. J. Am. M. Ass., 1914, lxiii, 2199. By Surg., Gynec. & Obst.

The author does not seek to show any relation, causative or otherwise, between intestinal and posture derangements and tuberculosis of the hips but calls attention to several cases of toxic arthritis, indistinguishable from the tuberculous type, which were associated with faulty posture and intestinal disturbance. All the cases here reported showed a negative von Pirquet reaction and recovered with perfect motion and function of the hip. It has been the author's experience that cases of arthritis in which the clinical, röntgenoscopic, and pathologic findings were typical of tuberculosis have never recovered complete function and motion.

The first case, a girl of 6, had had digestive troubles, constipation, and occasional "upsets" from her first year. She had pain in the right thigh following a long walk, and was unable to bear weight on the right leg. She was poorly nourished, had a prominent abdomen, flat chest, and round shoulders, von Pirquet negative. The measurements of the right leg were the same as those of the left leg. After a course of treatment, consisting of mechanical catharsis, inverted position ten minutes twice a day, and the wearing of a shoulder brace with abdominal support, she improved in nutrition, the subjective symptoms in the hip disappeared, and motion was normal.

The second case, a boy of 4, had had mild digestive troubles associated with pain in the knee for a year. He had an acute attack of pain in the right knee following a fall. The posture was suggestive of congenital visceral ptosis, as in Case 1. There was spasm and restriction of rotation and hyperextension in the right hip; von Pirquet negative. There was a disappearance of subjective symptoms and a return of normal hip function after treatment, as in Case 1.

The third case, a baby of 14 months, had pain and tenderness in the hip, originally diagnosed as tuberculous. It was cured under cartharsis and regulation of nutrition.

W. A. Clark.

## Steindler, A. C.: The Architecture of the Tarsus. Am. J. Orth. Surg., 1914, xii, 275.

By Surg., Gynec. & Obst.

The author reviews the law of bone transformation as formulated in 1892 by Julius Wolff. This law was primarily advanced as a protest against Hueter-Volkmann's pressure theory, which claimed that increase in pressure inhibited, and decrease of pressure stimulated, the growth of bone.

The transformation law essentially maintains that wherever pressure or traction forces are applied to the bone, traction or pressure lines of force will be established, following the laws of statics, and the inner structure of the bone will be arranged into lamellar systems under the guidance of these mathematical laws. Quotations from an extensive bibliography show the strength and weakness of this law.

The author then demonstrates his own studies of the architecture of the tarsal bones by sections through the tarsus made in sagittal and frontal sections as well as by the X-ray projections.

He concludes by saying that with due allowance

to biological influences the inner architecture of the tarsus is principally governed by static laws. Under these laws the texture of the foot will undergo changes, which in a measure are independent of, and often greatly exceed, the latitude of motion granted by joint action.

In all the instances cited lines of force are seen to pursue their course unerringly through the barriers of the tarsal joints, by which they are interrupted,

but not deflected, in their course.

The article is accompanied by eighteen cuts, which show the lines of force in the various bones of the LLOYD T. BROWN.

### SURGERY OF THE SPINAL COLUMN AND CORD

Ogilvy, C.: Subluxations of the Atlas upon the Axis. Am. J. Orth. Surg., xii, 314.

By Surg., Gynec. & Obst.

The author classifies subluxations of the atlas as: (1) subluxation forward, backward, to the right or to the left, upon the same plane; (2) flexion subluxation forward, backward, to the right or to the left; and (3) rotation subluxation around the odontoid process, to the right or to the left.

He cites a case of forward fixation and subluxation of the atlas, caused by throwing a baseball. The case came under his observation about four months after the injury. Following manipulation and extension the patient gained excellent control of the neck. The conclusions following his very interesting paper are:

1. Subluxations of the atlas are of rare occurrence. 2. All injuries of the cervical spine should be

X-rayed.

3. An unexpected sudden jolt or jar without any direct blow may be sufficient to produce subluxation of the atlas.

4. The most frequent cause is an injury (oftentimes from a fall) on the top of the head or on the back of the neck.

5. Pressure-symptoms may be slight or entirely absent.

6. The onset of pressure-symptoms may be

delayed for days and even weeks.

7. The best classification is one which primarily divides the cases into three main groups: (a) Those in which the displacement is on the horizontal plane -directly forward, backward, to the right, or to the left. (b) Those with the displacement on two planes, the horizontal and vertical, namely, the flexion cases. (c) Those with the displacement upon the same plane, but with rotation around the

An absolute line of demarcation cannot be drawn in some cases between these three types, as, to a certain extent, they are apt to pass one into the

8. Subluxations of the atlas are associated with fractures in the majority of cases.

o. In cases not immediately fatal, associated fractures in themselves, either of the odontoid or of the atlas, are not of as great significance regarding prognosis as is the support afforded the atlas.

10. If seen at the time of the accident or shortly afterward, immediate reduction should be made, and a fixation plaster of Paris dressing applied.

11. Later treatment is called for in every case with distressing symptoms. When they are not present, leave well enough alone.

12. Operative treatment should be advised when other methods fail to relieve symptoms.

H. W. MEYERDING.

Gümbel, T.: Treatment of Spastic Paralyses by Förster's Operation (Zur Behandlung der spastischen Lähmungen mit der Förster'schen operation). Berl. klin. Wchnschr., 1914, li, 1353.

By Surg., Gynec. & Obst.

Up to the present time 107 cases of Förster's operation for Little's disease have been reported. Unfortunately, however, in most of the cases only the first results have been reported and the cases have not been followed long enough to give the ultimate results.

Gümbel reports 8 cases of his own from which he concludes that the results of the operation are very unsatisfactory. None of the children have learned to walk alone, the chief result for which the operation was proposed. The decrease in the spasms is not necessarily an advantage, as it may lead to weakness of the muscles. He thinks there are also post-operative trophic disturbances that contribute to this muscle weakness. He thinks, too, that the power of the spinal column as a support may be decreased by extensive laminectomy. The operation is absolutely contra-indicated in cases of idiocy, athetosis, epilepsy, luxation of the coccyx, and severe spasms of the arms; but even in the small group of cases where only the legs are spastic, he thinks that better results may be obtained by the ordinary orthopedic treatment. Recently published works of other authors tend to confirm his opinion. A. Goss.

### SURGERY OF THE NERVOUS SYSTEM

Hanes, F. M.: Nerve Injuries Due to Bony Abnormalities. Old Dominion J., 1914, xix, 235. By Surg., Gynec. & Obst.

In view of the fact that the ulnar nerve runs in a groove close against the bone, it is astonishing that there are so few severe injuries to it from fractures and dislocations. One very odd type of nerve injury, "delayed lesions of the ulnar nerve," has

been but infrequently reported.

A typical case is reported of an elbow fracture at 4 years of age, seen at 35, in which there had been wasting and weakness of the right hand for five years. The elbow-joint was enlarged, and had incomplete extension. The ulnar nerve was the size of a lead pencil in the region of the groove; there was muscular weakness and atrophy, hypæsthesia, and hypalgesia in its distribution. At operation a dense fibrous tissue surrounding the nerve was cut longitudinally, the groove was enlarged with the result that six weeks later sensory changes could no longer be found, and the patient's strength had greatly increased. The dense fibrous tissue had formed in response to continued traumatism by the displaced inner condyle.

The condition must be differentiated from tabes, syringomyelia, cord tumors, and neuritis. Cervical ribs may cause about the same symptoms and the author cites two cases in point. The first, a woman of 26, had had pain, varied in character, along the right ulnar nerve for five years. The second, a woman of 43, had had a constant dull aching pain along the ulnar side of the arm for one and one-half The sensory and muscular changes were about the same as in the case with the nerve involvement. All had great difficulty in apposing the thumb and fingers. Examination of the first case showed bony prominences of both supraclavicular fossæ. X-rays showed cervical ribs; the right was removed and in three weeks great improvement was noticed. Palpation in the supraclavicular fossæ of the second case showed enlargement on the right. X-rays showed bilateral cervical ribs; the right was excised. For two days the deltoid, triceps, and biceps were paralyzed, but they gradually recovered and all pain ceased. Cervical ribs usually cause trouble on one side only; it comes on gradually and maybe never. At times the radial pulse on the affected side is delayed from the rib pressing on the subclavian artery. C. A. STONE.

Katzenstein: Demonstration of Splicing a Plexus in Infantile Paralysis (Demonstration zur Plexuspropfung bei spinaler Kinderlähmung). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The experiments of Heineke and Erlacher possess great theoretical interest; but their practical value is not so great, because the implantation of a nerve into a paralyzed muscle can be accomplished only in paralysis of individual muscles; but for isolated muscle paralyses tendon transplantation, and especially implantation of muscles, are excellent methods of operation. It is much more important to find methods of operation in total or subtotal paralysis of an extremity, in which conditions we have thus far been practically helpless. For these difficult cases the author has devised a new operation, viz., the splicing of the plexus of such a paralyzed extremity with a sound nerve from the other side. The assumption in this operation is that prolongations grow from the implanted nerve through the plexus into the different nerves of the extremity.

The correctness of the above assumption has been confirmed by experimental study and clinical observation. Paralysis of the arm, similar to infantile paralysis, was produced in a monkey by sectioning the anterior roots of the cervical cord; then a nerve from the sound side was implanted into the plexus of the paralyzed arm. Bielschowsky, who was associated with the author in these experiments, could demonstrate new nerve-fibers to the finest branches of the ulnar, radial, and median nerves. Also in different patients operated upon the revivifying of different nerve branches of the spliced plexus could be demonstrated.

The technique of the operation is demonstrated on an anatomical plate. In paralysis of the arm the supraclavicular nerve was once sutured into the brachial plexus of the sound side and twice into the descending ramus of the hypoglossus of the sound side behind the vessels between the œsophagus and the spinal cord. In a paralyzed leg the obturator nerve of the normal side with all its end branches

was sectioned, brought over to the diseased side retroperitoneally, and sutured into the plexus. SPITZY of Vienna pointed out that an Italian author had previously performed a similar opera-

Katzenstein replied that Maragliano's operation was different. In a case of total paralysis of the leg he spliced the crural nerve of the paralyzed side with a branch of the crural of the sound side. characteristic point about his (Katzenstein's) operation is the use of a nerve in its totality for conduction, and especially the suturing of it into the

plexus of the paralyzed side.

Von Hacker: Direct Implantation of Nerves into Muscle and Muscular Neurotization in a Case of Paralysis of the Trapezius (Direkte Nerveneinpflanzung in den Muskel und muskuläre Neurotisation bei einem Falle von Cucullarislähmung). Zentralbl. f. Chir., 1914, xli, 881.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The question of the implantation of nerves directly into paralyzed muscles has recently been brought to the foreground again in orthopedic surgery by the work of Erlacher and Heineke.

Von Hacker reports a case which he operated upon early in 1907, in which he implanted the nerve directly and carried out a muscular neurotization as Gersuny had done a short time before. After the operation there was paralysis of the trapezius as a result of injury to the accessory nerve. Since nerve-suture was impossible technically, the central stump of the accessory was implanted directly into the trapezius, and a flap was also split off from the levator scapulæ and united to the freshened trapezius. At a later operation a piece of muscle, this time from the deltoid, was also sutured on in the

same way. The result was excellent. The arm could not only be lifted up to the perpendicular position, but also, for mechanical reasons, there was a restoration of the injured shoulder muscle.

Although at that time the reason for this good result could only be surmised, since both a peripheral nerve implantation into a nerve plexus and a restoration of the scapular portion of the trapezius had been carried out, Erlacher's conclusive experimental and histological studies remove all doubt as to the great importance of muscular neurotization and direct nerve implantation. Von Hacker certainly deserves the credit of having first performed this operation that promises so much.

### SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Sprengel: Hastening the Healing of Granulating Wound Surfaces by Dividing Them (Die Beschleunigung der Heilung granulierender Wundflächen durch Teilung). Deutsche Gesellsch. f. Chir., 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Although the problem of getting granulating wounds to cicatrize quickly has been solved in general, there are certain cases that are not satisfactory, either because the injured surface is too large or because peculiar conditions demand a more resistant material. Under these conditions the author recommends dividing the large wound by

one or more skin-flaps passing transversely across the surface of the wound. A large flap can be made from one side, or, better still, two shorter flaps, one from each side, with strong well-nourished pedicles, brought together in the middle. The granulations are cut away in a trough shape corresponding to the breadth of the flap. The principle of the operation is that at least two new wound edges are artificially created in addition to those already existing, from which scar formation is hastened in a truly surprising way. Pictures of individual cases are given.

KATZENSTEIN.

### **MISCELLANEOUS**

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSES, ETC.

Pim, A. A.: Carbolic Acid in the Treatment of Tetanus. Practitioner, Lond., 1914, xciii, 819. By Surg., Gynec. & Obst.

The author cites a case of tetanus in an adult, 24 years of age, in whom the early symptoms had passed unrecognized. He was seen five days after the first spasms of the jaw had appeared, at which time he was quite rigid, and the slightest sound or touch produced clonic spasms. A large septic ulcer of the leg, which was evidently the source of the infection, was excised, and a pad soaked in carbolic acid applied to the wound. Thirty minims of a 1:100 solution of carbolic acid was injected hypodermatically every three hours.

A distinct improvement was noted at the end of forty-eight hours; the spasms were less frequent and the pain was relieved. Carboluria appeared twice; each time the injections were stopped until it passed off. The patient made a complete recovery.

The author states that a veterinary surgeon in the vicinity had treated seven cases, one case with carbolic acid alone, which recovered; another veterinary surgeon treated four cases with four recoveries.

The author states that the action of carbolic acid has no specific antagonistic effect upon the tetanus toxin, and that it is likely that it is the anæsthetic property of carbolic acid which brings about the beneficial effect.

ARTHUR B. EUSTACE.

Fischer, H.: Diabetes and Surgery (Diabetes und Chirurgie). Deutsche Ztschr. f. Chir., 1914, cxxxi, 404. By Surg., Gynec. & Obst.

Fischer discusses the various surgical complications of diabetes, such as diabetic carbuncle, perforating ulcer of the foot, the various forms of gangrene, diabetic necrosis of internal organs and of bone, also major operations on diabetic patients. In a total material of 86 cases he lost 42, a mortality of 48.8 per cent; of 57 patients operated upon for surgical complications of diabetes there was a mortality of 31, or 54.5 per cent; of 11 amputations for diabetic gangrene, the mortality was 8, or 72.7 per cent, and of 14 major operations on diabetic patients, 5, or 36 per cent. Other operators have had much more favorable results; for instance, Karewski in his operative cases and Küster in his amputations had a mortality of 14.7 per cent; but they also had much better material and more favorable conditions for their operations.

Tuffier operated on 15 diabetics for new-growths and lost 6, or 40 per cent; Mayer reports 11 operations for gangrene with 6 deaths, 54.6 per cent, and among 61 patients with diabetic gangrene not operated upon there were 40 deaths, or 80.3 per cent.

The question of operation in diabetes can be decided only by careful study of an immense amount of material; so all collections of operations, even though only small ones, should be published.

A. Goss.

## Wainwright, J. M.: The Present Status of Our Knowledge of Shock. 180. Penn. M. J., 1914, xviii, By Surg., Gynec. & Obst.

The question of shock is rapidly reaching an almost metaphysical basis. Definite ideas, and more particularly, definite plans of action in preventing or treating a condition immediately threatening the very life of a patient, are imperatively needed by clinicians. This is truly the vital point of the question.

The two main principles in the prevention of shock are blood-pressure and nerve-blocking. From these has grown Crile's wonderful system of anociassociation. Anoci-association is the logical culmination of all the work that has preceded. Careful attention to anoci-association will show proof that cannot be contravened in a thousand laboratories, especially warring laboratories, and that is a

lowered operative death-rate.

To illustrate the value of anoci-association, the author appends to his article a table of all hysterectomies operated on since the adoption of the necessary technique. Excluding two perfectly legitimate exceptions, the average pulse-rate for seventeen hysterectomies the evening before operation was 89; the average pulse-rate the evening after was 80. These patients were all operated upon in the morning and the record after operation was for the evening of the same day. Some of these patients were very much exsanguinated by prolonged hæmorrhages and some had very large tumors, the largest weighing four and one-half pounds.

The value of the method by which a series of seventeen such severe cases can be operated upon with an average pulse-rate of nine beats lower than

before operation is incontestable.

The table is of interest in showing that the method itself works just as satisfactorily in the hands of surgeons who do not possess the wonderful dexterity or the wonderfully organized clinic of Crile.

EDWARD L. CORNELL.

### SERA, VACCINES, AND FERMENTS

Goodman, C., and Berkowitz, S.: Ferment Diagnosis (Abderhalden) for Cancer. Surg., Gynec. & Obst., 1914, xix, 797. By Surg., Gynec. & Obst.

The authors report that they had obtained 30 reactions out of 33 cases of malignancy and the results obtained corresponded to the operative, clinical, and post-mortem findings. They empha-

size the following imperative precautions to be observed in order to obtain satisfactory results with the dialysis test:

r. Absolute asepsis and especial cleanliness in

caring for the glass-work.

2. The substrate must be thoroughly macerated, for, as Abderhalden emphasized, unless the tissse has been minutely divided before boiling it cannot be entirely freed from blood. The substrate must be tested before each series of reactions.

3. The serum must be centrifuged until all traces of red blood-corpuscles are removed. Dis-

colored serum should be discarded.

4. The thimbles must be tested and then handled with great care to avoid reaction due to perspiration or bacterial contamination. Blowing the water from the wash-bottle may contaminate it with saliva sufficient to produce conflicting results.

In conclusion one is competent to perform the test only when such skill is acquired that negative

cases are diagnosed as negative.

## Sherman, G. H.: Bacterial Vaccines and Anaphylaxis. Internat. J. Surg., 1914, xxvii, 416. By Surg., Gynec. & Obst.

The author seeks to prove that the fears of many

physicians concerning resultant protein poisoning from the use of bacterial vaccines are groundless. The sensitizing dose is .000001 ccm. which contains about .00008 mg. of protein. It requires 2 mg. of horse serum protein to kill a sensitized guinea pig, which is 400,000 times the amount necessary to sensitize the animal. Man weighs about 300 times as much as a guinea pig, hence the minimum killing dose to an individual who has been sensitized would be not less than 450 mg. It has been estimated that the number of dry germs per mg. is on an average about 4,500,000,000. If we assume that 450 mg. is the minimum fatal dose to a sensitized individual and that 450,000,000 organisms is the average initial dose in a vaccine, as this dose would contain .or mg. of protein, it would require 10 times 450 or 4,500 times the average dose of vaccine to produce ana-This would amount to a halfphylactic death. gallon of the usual vaccine; hence it is clear that

bacterial vaccines could never be given in doses large

enough to produce protein poisoning. He claims

that the danger of the vaccine in causing a rapid

disintegration of the infecting organism and a re-

sultant protein poisoning is contrary to actual

experience and needs no further proof.

On the other hand, if the individual be previously sensitized by serum, then a subsequent dose of serum might produce anaphylaxis. In such cases he advises the giving of small doses at short intervals until the possible excessive enzymes are consumed, after which large doses will be devoid of danger. He says that bacterial vaccines in therapeutic doses are non-toxic and their action is entirely one of sensitization, and that the improvement in symptoms is due to a destruction of the invading organism by the body.

HENRY J. VAN DEN BERG.

### BLOOD

Heys, A.: The Treatment of Certain Injuries and Diseases by Bier's (Arterial) Hyperæmic Method. Med. Press & Circ., 1914, cxlix, 422.

By Surg., Gynec. & Obst.

Heys states that the object of Bier's treatment is to cause a hyperæmia of the parts referred to. This is produced (1) by means of an elastic band; (2) by cupping glasses; (3) by means of hot air. Heat has also been applied in the shape of baths, poultices, etc.

The hot-air method is particularly adapted to cases of old-standing arthritis, both rheumatic and traumatic, and neuralgias of all varieties. It may be applied surgically in bringing exudates of blood and serum to rapid absorption, especially after sprains. The author states that the treatment has been very effective in reducing the ædema and

stiffness of a Colles' or Pott's fracture.

Beneficial results are also claimed in the treatment of varicose veins, even when ulceration be present, although a recent thrombosis contraindicates the hot-air bath. Several cases of chronic eczema have also been benefited by this treatment. EUGENE CARY.

Ohkohchi, T.: Control of Hæmorrhage (Über die Blutstillung). Beitr. z. klin. Chir., 1914, xciv, 620. By Surg., Gynec. & Obst.

The methods of controlling hæmorrhage may be classified as physical, chemical, and biochemical. The ideal method, ligature, is not applicable to parenchymatous organs. Tamponade necessitates leaving the wound open with danger of infection and secondary hæmorrhage. The biochemical method is the transplantation of living material to the bleeding spot. Muscle, fat, fascia, omentum, etc., are used. Recently Kocher and Fonio have reported on a new substance, coagulen, found in normal blood-platelets and said to hasten the formation of thrombokinase.

Ohkohchi has experimented with rabbits as to the effect of transplanting living tissues, such as muscle, fat, fascia, and omentum in stopping hæmorrhage from parenchymatous organs, especially the liver, spleen, and kidney. In general he found that the hæmostatic effect of living tissues is largely a mechanical one and that the thrombokinase has a minor effect. In order to stop hæmorrhage the tissues must have a certain size and thickness, the wound must be carefully cleaned, and the flap pressed against the wound for several minutes. The ability of the tissue to adhere to the wound surface plays an important rôle and is most marked in muscle-tissue.

Muscle-tissue is the most useful material because it adheres promptly, while fat is friable, and fascia easily rolls itself up. In operations on the liver a flap of omentum is most useful. In kidney operations perirenal fat is conveniently used.

In reference to the hæmostatic effect, muscle-

tissue stands first, fascia last. Healing is delayed if the transplanted tissue undergoes necrosis. In wounds of the liver a large percentage of the muscle flaps became necrosed. In kidney wounds muscle usually healed in without necrosis. Omental flaps rarely become necrotic. Adhesions to neighboring organs are more frequent in muscle transplantation. Secondary hæmorrhages cannot be prevented absolutely in every case. After healing one finds connective tissue proliferation in the adjacent parenchyma with injury to the epithelial cells.

Ohkohchi also experimented with foreign bodies to stop hæmorrhage. Pieces of intestine and bladder disinfected with iodine-potassium iodide solution—were used successfully. Finally pieces of sponge sterilized by boiling were found to have a prompt hæmostatic effect on parenchymatous

wounds.

Hartwell, J. A.: A Consideration of the Various Methods of Blood Transfusion and Its Value. N. Y. St. J. Med., 1914, xiv, 535.

By Surg., Gynec. & Obst.

E. P. ZEISLER.

Hartwell's consideration is based upon a study of the recent literature. Blood transfusion, he says, is in reality a homologous transplant of living tissue, the tissue being a complex fluid which possesses the peculiar property of coagulating under certain conditions. We do not know that a small dose will not produce, by chemical interaction, the same effect as a massive dose; and small doses frequently repeated may serve best in certain cases. The only condition in which a massive transfusion of whole blood seems indicated is after a loss from direct hæmorrhage of such severity that life is endangered because of insufficient blood to maintain oxygenation.

There can be no argument against transfusion, properly performed, in cases of acute hæmorrhage. The indication in ruptured extra-uterine pregnancy, gastric and duodenal ulcers, and in typhoid perforations, for instance, is to replace the blood which is Although the red cells may be rapidly delost. stroyed, they serve as oxygen carriers during a critical period, and may tide over an emergency until the bone-marrow can replace the cells that are lost, or until a needed operation can be performed.

When the loss of blood is the essential feature of the pathological process, as in hamophilia and hamorrhage of the newborn, the indication is double: to replace the blood lost, and to so affect the organism that no further bleeding shall occur. The first may require a massive transfusion; for the second, a small intramuscular injection of horse serum or of the thrombin solution of Clowes and Busch is simpler and as effective. Except in emergencies, then, serum should be the choice in this class of cases. In cases of primary or secondary anæmia not associated with hæmorrhage, transfusion, so far as evidence goes, has only a temporary value. It may tide a patient over an emergency, or cause a transient improvement, but

it does not meet the underlying pathological condition and cannot be considered curative.

The use of transfusion in infectious processes, local and general, has been disappointing. Isolated apparent successes make the problem worthy of further study, particularly along the lines of the employment of serum from a person who has recently recovered from the same infection.

The ideal technique for transfusion involves four factors: absolute asepsis; no blood change; ability to measure the quantity transfused; and ease of accomplishment for donor, recipient, and operator. Of the three methods in vogue, the intima-to-intima method, popularized by Carrel, is a difficult procedure of considerable magnitude which affords no measure of the amount transfused. The second method, the employment of a paraffin-coated tube as a connecting link between donor and recipient, is also far from ideal, as no quantitative estimation is possible and the danger of clotting is always present.

The best method is one employing an intermediate receptacle, either making the transfer so rapidly that the blood has been drawn and discharged into the recipient's vein in less than the normal coagulation time (Lindemann); or by the simpler technique of adopting means to delay or prevent coagulation.

The use of a paraffin-coated apparatus, of which there are several types, has a very serious objection —the difficulty of completely coating the entire system with a thin smooth layer. The danger attending any error in its accomplishment is obvious. To meet this difficulty Satterlee and Hooker have perfected a method which promises to fulfill all requirements. They avoid contact of the blood with traumatized tissues by introducing an outside cannula into the donor's vein, and passing a second cannula, connected with the receptacle, within this and further into the vein. To prevent coagulation, they employ hirudin-leech extract-1 to 500 in 9 per cent NaCl solution; 2 ccm. will wet the inside of a 220-ccm. receptacle, and will prevent coagulation for 20 minutes, which allows plenty of time to empty the receptacle through a cannula already introduced into the recipient's vein. This amount of hirudin can cause no danger to the recipient, even in cases of hæmophilia, for it is onesix-thousandth of what has been established as a harmless dose. ALBERT EHRENFRIED.

### BLOOD AND LYMPH VESSELS

Horsley, J. S.: A New Method of Lateral Anastomosis of Blood-Vessels and an Operation for the Cure of Arteriovenous Aneurism. Tr. South. Surg. & Gynec. Ass., Asheville, 1914, Dec. By Surg., Gynec. & Obst.

Horsley reviews briefly the history and technique of lateral anastomosis of blood-vessels, both when uniting an artery to a vein, as in reversal of the circulation, and when uniting vein to vein, as in Eck's fistula. He doubts the practical utility of reversal of the circulation and mentions some of his experiments which are not yet ready for full report, but which seem to show that in reversal of the circulation by the end-to-end method the blood returns to the heart by anastomotic venous branches a short distance below the site of operation; they also show that the arterial blood in the reversed femoral vein never reaches the foot. If the circulation is to be reversed, however, it should always be done by lateral anastomosis and not by the end-to-end method.

He describes a clamp which he has devised for lateral anastomosis of blood-vessels. It is five inches in length, has delicate curved blades, and the handles are in an axis with an imaginary line drawn from the tip to the heel of the blades. This permits the handles to lie flat and they are out of the way during the suturing.

The forceps can also be used for temporary occlusion of blood-vessels and for the cure of arteriovenous aneurism. In a lateral anastomosis the vessels are clamped by two of these forceps and held together by two sutures near the end of the pro-posed anastomotic opening. The opening is made with scissors, and a tractor suture is placed in the outer wall of each vessel but not tied. The suturing is done with a curved needle, the knot being on the outside. A continuous overhand stitch is used, and when the other angle has been reached one of the tractor sutures in the outer wall is withdrawn and a tractor suture placed so as to unite both walls. This when pulled upon everts the intima and makes the suturing easier. The thread is tied to the short end which was grasped in the hæmostat when the first knot of the continuous suture was made.

In using the forceps for arteriovenous aneurism, the vessels are first dissected down to the aneurism, and first the artery and then the vein are grasped by the forceps near their point of communication. The communication between them is then divided and the opening sutured. This makes the operation easier even when a tourniquet is applied, but it should be especially valuable where no tourniquet can be used, as in the upper femoral region.

### POISONS

Steinmann, F.: A New Treatment for Putrid Abscess (Eine neue Behandlung stinkender Abscesse). Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In the treatment of putrid abscess the author conducts a continuous stream of oxygen or air into the base of the abscess. As large a rubber drain as possible is passed into the base of the abscess; into this a narrower rubber catheter is introduced and connected by a tube with an oxygen tank or an air blast. The stream of oxygen or air has a drying effect, mechanically removes the secretion, and kills the anaërobic bacteria. The effect is a rapid dis-

appearance of the odor and secretion, so that very soon the drain can be shortened daily and ordinarily removed after a few days. The method, which demands some skill and careful watching, shortens the duration of putrid abscesses one-half or more. It can be carried out with oxygen in any private house. In any hospital or private house a hydrostatic blast may be attached to the water fixtures.

KATZENSTEIN.

Küster, H.: The Value of Peristaltin in Laparotomy (Über den Nutzen des Peristaltins für die Laparotomierten). Zentralbl. f. Gynäk., 1914, xxxviii, 1096.

By Surg., Gynec. & Obst.

The author endeavored to determine the value of peristaltin in stimulating bowel peristalsis on laporotomy patients. He first determined the time when bowel peristalsis became effective, using the expulsion of flatus as the indicator. On 31 patients he found that, on an average, flatus was expelled at the end of 41 hours. Peristaltin then began to result and in 8 cases he injected 0.5 ccm. intramuscularly on the evening following the operation. No appreciable shortening of the time was observed, although he gained the impression that bowel peristalsis commenced earlier and that the

patients suffered less.

In the next series of 28 cases submitted to laparotomy the author injected 0.5 ccm. one-half hour before operation and another 0.5 ccm. on the evening following the operation. The first 8 cases showed surprisingly good effects from the peristaltin, flatus being expelled on an average of 17 hours after operation. The patients did not appear to have been laparotomized, so fresh was their appearance. In the remaining 20 cases, however, results were not so good, although the time for bowel activity was shortened from an average of 41 hours for those who received no drug to 33 hours for the 28 in this series who received the drug. The general condition of the patients, subjectively and objectively, was much improved, from which the author concludes that the condition of patients after laparotomy depends considerably upon the time when bowel activity is established. The author believes the last method of treatment is to be preferred as a routine aid; if no effect is observable on the second evening following the operation, another 0.5 ccm. should be administered. L. A. Juhnke.

### ELECTROLOGY

Dodd, W. J.: Treatment of Acute Röntgen Ray Dermatitis. Am. J. Röntgenol., 1914, i, 430. By Surg., Gynec. & Obst.

Dodd's article was prompted by the possible renewal of untoward röntgen effects incident to the installation of powerful apparatus in small hospitals with unqualified and untrained operators in charge. The Coolidge tube has added another source of danger in the hands of those ignorant of its power. Twelve cases of röntgen dermatitis were seen by

Dodd in 1914. Seven cases of alopecia from frontal sinus exposures, which were due to repeated exposures; three resulted from small high-frequency coils used in dental work; two from fluoroscopic examinations to determine a Pott's fracture. As a preventive treatment, Dodd recommends bathing the parts in bicarbonate of soda solution. Results of further experiments to establish the uniform success of the bicarbonate treatment will be published soon.

For acute röntgen dermatitis the author recom-

mends the following whitewash:

 Zinc oxide.
 0.5 oz.

 Phenol
 0.5 dr.

 Glycerine
 1 dr.

 Aquæ calcis
 8 oz.

Directions: Shake well and bathe the area for five to ten minutes, twice or three times daily. Avoid heavy dressings and when possible expose the lesion to the air. Do not apply the remedy on a dressing and allow to remain for five or ten minutes, but put it on directly and let the air get to the lesion. Under no circumstances use an ointment. Use a fresh quantity of wash every time it is applied and do not leave the fluid exposed to the air.

E. H. SKINNER.

Nordentoft, J. and S.: Experiences with Röntgen and Radium Treatment of Cancer (Nogle resultater af Röntgenbehandlung med nogle Bemaerkninger om radium og röntgen). Ugesk. f. Læger, Kjøbenh., 1914, lxxvi, 1541, 1556.

By Surg., Gynec. & Obst.

J. Nordentoft tabulates the minute details of 21 cases of external cancer in which the patients were apparently cured, as the cancer has vanished and there has been no sign of recurrence during the interval since, which ranges from a few months to three years. The tumors were all on the face except

one at the mouth of the urethra.

S. Nordentoft was the first physician in Denmark to report a case of deeper cancer with multiple metastases in which a clinical cure was realized with röntgen exposures. The patient, a young woman, had had one ovary removed fifteen months before for a supposed benign tumor. The cancer was in the remaining ovary, which was then removed. Three weeks afterward the röntgen treatment was begun when several metastatic lumps could already be felt. One in Douglas' pouch was a knobby tumor as large as a fist. The röntgen treatment was applied systematically and the metastatic tumors subsided; others developed at other points again and again, and each time they retrograded under röntgen treatment. Several times he had expected to present the patient at a meeting of his medical society but each time new metastases developed in the interval between the sending in of the notice and the meeting. At present no tumors can be palpated and there is apparently nothing abnormal in the pelvis except that the serosa is rough and irregular in Douglas' pouch. He has not given up hopes of a final cure

as the metastases develop now at longer intervals and seem to be more susceptible to the röntgen rays. There is also a kind of auto-immunization to be counted on, like a vaccine therapy, from

absorption of the cancerous tissue.

Nordentoft reports a number of other cases of cancer which have been given röntgen treatment with encouraging results. He regards it as superior to operative measures even for superficial cancers. as it does not sacrifice any tissue; even the stroma of the cancer is saved, and he believes that there is less danger of recurrence. Last but not least, patients come for treatment at an earlier stage when they know they do not have to submit to a mutilating operation. His experience with radium, on the contrary, has been unfavorable. He emphasizes the fact that treatment of cancer requires individualization and skillful application of adjuvants as A. Goss. needed.

Levin, I.: The Relation Between the Surgical Treatment and Radiotherapy of Cancer. Med. Rec., 1914, lxxxvi, 615. By Surg., Gynec. & Obst.

The author discusses the limitations and results of surgical treatment of carcinoma and gives his own technique for the application of radium therapy

and of röntgen therapy.

Since cancer remains during the greater part of its development a purely local disease the success of local treatment is considerable; but surgery alone is able to give relief in less than 30 per cent of cases and as no further progress can be expected in this method of treatment, other methods must furnish whatever advance is to be made. Radiotherapy is the only physical method having merit. It is based on the so-called selective action of the rays on the cancer-cell. Through the biochemical action the cells become diseased and if the dose is sufficient the cells are destroyed. The author believes that radium rays should be used when the disease area is limited in extent and involves organs within whose lumen the radium can be placed, as the trachea, œsophagus, rectum, and vagina. The combined surgical and radiotherapy treatment is the ideal one. Surgery must remove the gross tumor whenever possible and radiotherapy must destroy the small islands of cancer tissue which are usually left behind, even in radical operations. It is important that one method follow the other promptly.

Malignant tumors are classified in the light of the combined treatment under three groups as follows:

1. Superficial, or those seated in and under the skin. These are most easily influenced by the rays and usually surgery is not needed to effect a cure.

2. Deep, or those seated in and under the mucous membranes. The author considers this group of cases the true domain of radiotherapy. Surgery or diathermy, however, should be used to remove the greater part of the tumor.

3. Internal, or those seated in and under the serous membranes. These are considered least amenable to radiotherapy. Wherever possible, the growth, if inoperable, should be brought nearer the surface so that it can be more easily influenced by the rays.

It is expected that the Coolidge tube will make it possible to treat the deeper tissues as advantageously as the superficial lesions are now cared for. The outlook is considered at least hopeful, even in the inoperable cases.

WILLIAM. A. EVANS.

Heidenhain, L.: Radiotherapy of Carcinoma (Die Aussichten der Strahlentherapie wider die Karzinome). Strahlentherap., 1914, v, 25. By Surg., Gynec. & Obst.

Heidenhain emphasizes the fact that carcinomata in different parts of the body are entirely different in their course, and that conclusions drawn from the treatment of cancer of the uterus, for example, cannot be applied to cancer of the breast or other region; even carcinomata of the same region have an individuality; they do not react in the same way to a given treatment. The chief question in his mind in regard to radiotherapy is not whether it can be substituted for surgical treatment, but whether the results of surgery can be improved

by combining radiotherapy with it.

Great advances have been made in the surgical treatment of carcinoma in the past 25 years, and those advances are positive facts; it would be a great mistake to give them up for hopes held out by another form of treatment, however brilliant those hopes might be. One great danger to be feared is that the public will become so enthusiastic in regard to röntgen treatment that they will demand it and refuse operation. No greater service can be done the patient than to point out that early operation is the only certain method of combating cancer, and that while radiotherapy is very promising in certain cases it should be used only as a supplement to operation. Cancer of the uterus is the most amenable to röntgen treatment. It must always be borne in mind that röntgen doses that do not destroy carcinoma stimulate its growth. Therefore if röntgen treatment is given in response to popular demand in unsuitable cases there will be an increase in the number of inoperable carcinomata. A. Goss.

Sparmann, R.: Experiences in the Treatment of Malignant Tumors by Radium. Ann. Surg., Phila., 1914, lx, 567. By Surg., Gynec. & Obst.

Sparmann reports the experiences in the treatment of malignant tumors by radium in the General Hospital of Vienna. During a period of about nine months 52 cases of inoperable malignant growths were treated. He emphasizes particularly that only inoperable cases were treated by radium, because from the very beginning the members of the staff were convinced that radium should not be used in operable cases. They also have used radiation following an operation on tumors which were

not radically removed. In every case the clinical diagnosis of malignant tumor was confirmed by

histological examination.

They had at their disposal 225 mg. radium and 150 mg. mesothorium. This quantity was divided and placed in fifteen applicators, which were applied partly externally and partly internally; in the latter case in the periphery of the tumor. Frequently the tumor was reduced as much as possible before the irradiation; cross fire was also used. The filters were made of silver, gold, platinum, magnalium, and brass, or of rubber in various thicknesses.

At first they gave big doses up to 11,000 mg. hours at a time. In the last five months, however, they used at the most 1200 to 2000 mg. hours for one dose. The change was made because it was found that it often had such a great influence on the general condition of the patient, or that the radium destroyed the healthy tissues far beyond the limits of the tumor in too short a time. In every case the patients were given arsenic in the form of Fowler's solution to improve their general condition.

Their cases were divided into two series, the first of which received preventive and the second curative treatment. Of 6 cases treated in the first way only one has remained free from recurrence. Among all the cases treated curatively as well as preventively only 11 have remained free from tumors up to this time. Of these 7 cases treated curatively 5 were cases of epithelioma cutis (basal zellencarc). One was a case of carcinoma lingua, one a case of metastasis in the lymph-glands after sarcoma axillæ. Of the 4 cases treated preventively 3 were carcinoma of the mucous membrane of the mouth, one was a case of sarcoma orbitæ. In 6 cases improvement was noted, 14 were aggravated, and in 5 no effect could be seen during the period of treatment. Seventeen patients died; of these II died of tumor, mostly of cachexia, one from hæmorrhage, 2 of meningitis, one of old age, one of diabetes, and one of mediastinitis. The author's conclusions are:

From the above-mentioned results it may be seen that radium is not a panacea for malignant tumors. Aside from the fact that it does not always help, it often even injures patients as well in regard to the local lesions as by its harmful effect upon the general condition, manifested by tachycardia with a pulse-rate up to 120 and 140, dizziness, weakness, and vomiting. The latter has been observed especially after irradiation of the neck, probably due to irritation of the vagus. The local ill-effect is especially marked in that the healthy tissues are badly injured, so that it is impossible to prevent their further destruction. There is furthermore great danger of causing a hæmorrhage or perforating hollow organs, such as the intestines. There were 11 hæmorrhages in the series, one of them lethal. One patient died of mediastinitis.

There is no such thing as an elective effect. The tumor-cell is not more easily destroyed because of the specific action of the radium itself, but, being a degenerated cell, it is more susceptible to the

effect of any trauma. A greater susceptibility of the epithelium is seen only in contrast to the fibrous tissue.

As far as histological changes are concerned, the statement can only be made that there is no specific change in the tissues to be seen by radium irradiation. All that can be seen is necrosis and subsequent scar-formation, such as could be formed

spontaneously in any tumor tissue.

Radium has only a local effect; therefore it can never take the place of an operation by which all parts of tumor dissemination can be reached, as by the Wertheim operation of cancer of the uterus, or by the operation of cancer of the breast with removal of the lymphatic glands. It has been noticed in certain cases that during the treatment metastatic foci have been formed in the lymphatic glands.

The indication for treatment by radium in the case of a growth which has attacked a vital organ

must be the same as for an operation.

The hopes placed in radium as a new and successful means in the treatment of malignant tumors have not as yet been realized. Moreover, the number of cases which might be considered suitable for treatment shrinks constantly as further experiments develop the effects.

George E. Beilby.

Abbe, R.: Radium Beta-Rays; the Efficient Factor in Repressive Action on Vital Cells. *Med. Rec.*, 1914, lxxxvi, 909. By Surg., Gynec. & Obst.

In conjunction with Prof. Packard, Pegram, and others. Abbe has carried out a series of experiments with radium upon vegetable cells and upon some of the lower animals, such as mealworms and the lower forms of life found in the sea. The direct purpose of these experiments was to ascertain the influence of the  $\beta$ -ray which he believes to be the chief factor. He concludes as follows: B-rays separated from radium are demonstrated to be the efficient force most active against living cells. These rays are electrons or particles discharged from the radium atom, each bearing a charge of negative electricity. What the force is which actuates living cells is unknown, but it adds one link to the chain of facts to know that a charge of negative electrons carried into certain types of disorderly growing tumor-cells reduces them to orderly growth permanently.

Attention is also called to the fact that the stimulating properties of radium have been confused with the stimulation that is often observed in the natural growth of tumors, and while in some of the former experiments stimulation was observed the conclusions now are that it was due to an error in technique.

W. S. Newcomet.

Boggs, R. H.: Radium and Mesothorium in Conjunction with Röntgen Therapy. N. Y. M. J., 1914, c, 1155. By Surg., Gynec. & Obst.

During the past few years physicists have proved that both the X-rays and  $\gamma$ -rays are ether impulses

identical in nature, differing only in wave length and power of penetration, but, on account of the adaptability it is impossible to advocate the extended use of one to the exclusion of the other. Where large areas are to be treated and there are deep-seated growths in which there is an intervening layer of healthy tissue, the X-rays have the preference, while the best results with radium are attained chiefly in those cases in which the radio-active substance is brought into contact with the growth either in or on it, and in which the thickness of the tumor does not exceed four centimeters.

From a clinical standpoint, Boggs believes the penetration, method of filtration, and accessibility of application, more than the agent employed, determine the results in nearly all diseases which have been treated by the röntgen ray and radium. Of course, radium and mesothorium are supposed to have about ten times greater penetration than even the Coolidge tube. There are only a few lesions where such light penetration is needed or used; because, even when treating with radium, most lesions are so situated that authorities advise using filters which allow the high  $\beta$ -rays to pass, and reaction is produced by the high  $\beta$ - and low  $\gamma$ -rays.

In reviewing the literature of the reaction produced on tissue by contact with radium, the author finds that it is certainly very similar to the well-known reaction produced by the X-ray. It is more nearly identical than the physical description of radium or the röntgen ray. When either agent is applied, no organ is unaffected, provided the intensity is sufficiently great and the exposure sufficiently long. This does not mean that the intensity must be strong or that even a visible reaction be produced. In this connection the following from

Finzi is quoted:

"In general, radium rays, in small doses, have a stimulating, and, in large doses, a destructive action. The dose required to destroy every type of cells varies greatly; for instance, gland cells may be destroyed by the small doses, which do not harm the cells of the connective tissue or the skin. In other words, the sensitiveness to the action of the rays varies with the type of the cells and this is what we mean by selective action of the rays. . . . The lymphatic organs are very sensitive to the rays, the action being characterized by a destruction of the lymphoid cells. This behavior is also shown in the spleen and bone-marrow, but in the latter with the destruction of the leucocytic cells there occurs an increase of the erythrocytic series. Muscle tissue degenerates under the action of the rays. Cartilage is very little influenced, and even under the large doses shows increased growth. Endothelium of blood-vessels is extremely sensitive to the rays, and with small doses swells up enormously and may completely obliterate the lumen of the vessel, while large doses cause its destruction."

From Finzi's conclusions, it is clear that we should only have to refer to the physiological action of the röntgen rays to see that the X-ray produces an almost identical reaction. From the results produced by radium on angiomata and conditions closely allied to these tumors, such as flat nævi or port wine stains, it appears that the endothelium of the blood-vessels is more sensitive to radium than to the röntgen ray; although Pusey states that he can even duplicate the results of those which obtained in the treatment of vascular nævi by röntgen rays.

The therapeutic value of radium cannot be rightfully appreciated if it has not been studied with a sufficiently complete and varied range of filtration. It is very necessary to study secondary radiation produced by the various filters and the best methods of avoiding the deleterious effects of these rays.

In treating a case either by radium, mesothorium, or by the X-ray, a series of problems is always faced. Given a case with a certain lesion, its position, its extent, its susceptibility to the influence of this or that radiation, then the agent or agents to use must be determined. The duration and method of application can be varied almost to infinity. This enables us to realize how rich radiotherapy should be in its results when properly selected and employed.

Finally, radium therapy is the method of choice in carcinoma of the rectum, vagina, uterus, axilla, etc., but even here the X-ray forms a useful adjunct so far as the adjacent parts are concerned. The rays from radium and the X-ray both affect certain cells more than others, lymphoid tissue and the endothelium of the blood-vessels being first affected. All cells that are undergoing rapid reproduction are more readily affected than where reproduction is normal. Tumors, rich in blood-vessels and spreading by the lymphatics, are checked in three ways:

(1) by the action on the epithelial cells; (2) the endothelium of the blood-vessels undergoes proliferation until the lumen is almost obliterated; and (3) the channels or lymphatic glands are blocked, preventing metastases.

### Pfahler, G. E.: Electrothermic Coagulation and Röntgen Therapy in the Treatment of Malignant Disease. Surg., Gynec. & Obst., 1914, xix, 783. By Surg., Gynec. & Obst.

This method consists in the complete destruction or the removal of all visible and palpable malignant disease by means of the d'Arsonval current, followed, or at times preceded, by full doses of the röntgen rays, given from as many different fields of entrance as possible, so that as much irradiation is produced as though the rays alone were depended upon for the cure of the disease.

Twenty reports were made on twenty cases treated by this method, several of which were considered inoperable by the usual surgical technique.

The conclusions are:

 Electrothermic coagulation permits the destruction of a number of inoperable carcinomata and epitheliomata.

2. It is a bloodless operation and gives decided advantages in malignant disease about the mouth.

3. It seems that metastasis is less likely to follow, because the operative area is at once completely sealed.

4. The disease must be destroyed completely.

5. Deep röntgentherapy must be applied with the best technique and with the same degree of thoroughness as if it had not been previously destroyed.

6. Good results are being obtained in a number

of otherwise hopeless cases.

7. The time is too short to express any valuable opinion as to its permanency.

### MILITARY SURGERY

Jeger, E.: Blood-Vessel Suture in War (Kriegschirurgische Erfahrungen über Blutgefässnaht).

Berl. klin. Wchnschr., 1914, li, 1907.

By Surg., Gynec. & Obst.

The author reports eight cases of suture of blood-vessels during the siege of Przemysl. Most authors have held that suture of blood-vessels is seldom indicated in war because it cannot be performed at the front on account of the technical difficulties, and later when it can be done the collateral circulation is so well developed that ligation of the vessels is not dangerous.

While the above is often true, the author believes that in six of his own cases ligation would undoubtedly have been followed by gangrene. In one case he sutured the popliteal artery and vein, in one the popliteal artery alone, in two the femoral artery, in one the femoral vein, in one the axillary artery, in one the brachial artery, and in one the brachial artery and vein. In six cases the injuries were from artillery shots, one from shrapnel, and one from a bayonet wound. Five of the cases were completely successful; one was operated on so late the gangrene could not be prevented, in one other severe injuries necessitated secondary amputation, and in one the vein had to be stretched so much to suture it that it gave way later. He believes this case would have been successful if he had transplanted a segment of another vein and so avoided tension.

One of his cases was very remarkable. The arm was cold and anæmic and showed no pulsation two hours after the injury. The brachial artery and vein and the basilic vein were united by end-to-end suture. The pulse was imperceptible on both sides after operation and the general condition was discouraging. On the second day the patient began to improve, but the pulse on the operated side was weak and intermittent for two weeks. By the end of a month sensation and function were restored in the arm. Jeger knows of only one other case in which a limb was successfully reimplanted after it had been almost completely severed, one published by Janu. Many surgeons, notably Carrel, have experimented in the reimplantation of severed limbs, mostly without success, but these two cases indicate that it is possible.

Suchanek, E.: Gunshot Injuries of the Thorax and Abdomen (Über Schussverletzungen des Thorax und Abdomen). Beitr. z. klin. Chir., 1914, xci, 334. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author reports his experience in a military hospital with 177 injuries of the thorax, 98 of which were caused by musketry bullets, 69 by artillery fire, and 10 were contusions caused by the bursting of shells near the wounded man; there were also 33 abdominal injuries, 23 of them caused by musketry

bullets and 10 by artillery ammunition.

About half of the injuries of the thorax were perforating. In these it is often very difficult to make the diagnosis. In some injuries the position of the entrance and exit shots with reference to each other are such that opening of the thoracic cavity seems to be excluded, and yet there is injury of the lung; on the other hand, there are shots which it would seem must have caused injury of the lung, but there are no clinical signs of injury to the thoracic organs. The opinions with reference to the penetrating power of pointed bullets in comparison with shrapnel bullets, with relation to injuries of the extremities, do not apply in wounds of the thorax. The difference in injury may be due to the peculiar conditions of resistance in the thorax caused by the intercostal

There was hæmoptysis in 22 of the 177 gunshot wounds of the thorax, and among the 86 that penetrated the wall of the thorax there was hæmothorax in 36. The preponderance of pleural effusions in comparison with hæmoptysis is explained by shots that grazed the lungs. In 8 cases of pleural effusion infections were found that were regarded as primary and caused by the shot itself. In individual cases infection was transmitted by the pulmonary route. Lung infiltrations (Küttner) were observed in several cases. There was emphysema of the skin in only five cases, in one as a special complication of pneumothorax and hæmopericardium. In all the cases of contusion a grenade burst close by, and the men were either struck by great masses of earth or were thrown into the air and struck the ground with great violence. In these injuries tears of the lung, which may be caused by fractures of the ribs, bleed more than shot wounds of the lung.

Most of the non-perforating shot wounds of the thorax healed without any reaction, while there was infection in most of the perforating wounds. In contrast with injuries of the extremities injuries of the thorax are seldom typical. Most frequent is the shot from the shoulder through the musculature of the back, which is explained by the position of the soldier in the trenches. Among the Bulgarians there were also numerous shots directed anteroposteriorly, because of the frequent bayonet

charges.

The treatment should be strongly conservative. In perforating injuries hæmorrhage should be stopped by absolute rest, which also excludes the danger of secondary hæmorrhage. In hæmo-

thorax, puncture should be made only when difficulty in breathing, caused by the increasing hæmothorax, compels it. Pyothorax necessitates thoracotomy. Pneumothorax and emphysema of the

skin do not call for operation.

Among the 33 abdominal injuries 13 were perforating gunshot injuries, 6 projectiles remained near the point of entrance, while 12 passed through the abdominal wall without entering the peritoneal cavity; once a fragment from a grenade tore away a part of the abdominal wall; once there was contusion from masses of earth hurled against the patient. In 10 cases there were complicating symptoms, which in 6 cases indicated peritonitis; in two there was fæcal fistula, and in two there were signs pointing to injury of the genito-urinary apparatus.

An example is given of the danger of transporta-The man was "a tion in abdominal injuries. sacrifice to transportation." Fæcal fistulæ can be cured without plastic operation. Wounds of the bladder wall heal rapidly and without any reaction. There may be tension of the abdominal walls in

injuries of the thorax.

The danger of abscesses of the abdominal walls should not be underestimated. Abscesses, whether mixed with intestinal contents or caused by infection through bullets, are the only complications which compel the surgeon to operate in the military hospital. Hæmorrhage may furnish an indication to incise the abdomen. In all other conditions Suchanek holds fast to strictly conservative treatment. Of the 177 patients with thoracic injuries one with metastatic gangrene of the lung died; two of the 33 cases of abdominal injuries died of diffuse peritonitis and aneurism. The prognosis of war injuries of the thorax and abdomen is favorable if the patients have medical care. ZUR WERTH.

Saar, G. von: Treatment of Gunshot Fractures of the Extremities in War (Zur Behandlung der Schussfrakturen der Extremitäten im Kriege). Beitr. z. klin. Chir., 1914, xci, 351.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Von Saar reports one month's service in the reserve hospital in Belgrade. He says that injuries of the extremities comprise between one-half and three-fourths of all injuries, while gunshot fractures comprise about one-fifth of all injuries.

Among 518 injuries of the extremities von Saar observed 84 fractures, 40 of the upper, 44 of the lower extremity. He holds that röntgen examination, while very interesting from a scientific point of view, may be dispensed with for fracture treatment even in stationary hospitals. He lays the greatest emphasis on improvised methods with simple means. High fractures of the humerus should be treated with Christen's double rightangled splints and double extension traction. Fractures of the forearm are also treated by extension to avoid a fracture callus, and by a simple right-angled splint similar to Borchgrevink's. The results of extension treatment are good.

In fractures of the lower extremities von Saar points out that not only the first dressing but also the further treatment is of great importance. In treating fractures of the femur Florschütz' method is used, which combines semiflexion, suspension, and extension.

As a transportation dressing for fractures of the femur he recommends VonHacker's, which consists of a long strip of wood as broad as two fingers, provided above with a notch and below with a nail. It is applied to the side, reaching from the umbilicus down to the foot, and provides for simple exten-This is practically the same as the old Esmarch's transport dressing for fractures of the

Mention is made of Weissenstein's adaptation of the military stretcher for the transportation of fractures of the lower extremity, in which the stretcher rods are used as external splints. In fractures of the leg he recommends for the infected cases fenestrated plaster casts; for the non-infected, the splint extension with traction on the upper part of the shoe, especially in fractures of the lower third. In general, he recommends plaster casts only when infection renders frequent changing of the dressings necessary. He discusses the "Introduction to Military Surgery on the Battle-Field," issued to the Austrian army, in which he thinks too much importance is attached to plaster and papier maché dressings. FRANZ.

Oeconomakis, M.: Traumatic Paralysis of Peripheral Nerves after Gunshot Injuries; Experiences from the Last Balkan War (Über traumatische Lähmungen der peripheren Nerven nach Schussverletzungen; Erfahrungen aus den letzten Balkankriegen). Neurol. Zentralbl., 1914, xxxiii, By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

Oeconomakis has observed 275 cases of traumatic peripheral paralyses, not counting those which disappeared after a short time without any marked change in the electrical irritability of the nerve. In his cases there was always degenerative paralysis with complete reaction of degeneration. There were either primary injuries of the nerves, or compression by cicatricial tissue, or shock effect from discharge of infantry near by. The result was the same in all three; e.g., immediate and complete paralysis. In only two cases did the paralysis appear gradually within the next few days. At the time of the injury there was only the feeling of the blow, no pain, nor was there any pain later in spite of compression by cicatricial tissue. Pain was always caused by neuritis. Muscle contractures were rare, as well as trophic disturbances. Even where there was complete section of the nerve there were seldom any trophic disturbances.

The clinical picture is confused by the fact that in direct as well as indirect injuries there is a shock effect. The latter generally disappears within one to three weeks; but generally even after it has disappeared it is impossible to decide whether the injury is direct or indirect. The only means of differentiation is that in severe lesions or in complete severing of the nerve, in the beginning of the second month there appears a marked decrease in galvanic excitability. The reversal of the formula for the galvanic current is for the most part without significance for diagnosis, as it may appear in very

slight lesions.

Sixty-two operations were performed, among them 43 nerve-sutures and 19 neurolyses, mostly performed by Prof. Serulanos. Ultimate results cannot be reported, as the time is too short; but it may be noted that the neurolyses generally did not give satisfactory results. On the second operation it was found that the nerve, which at first was soft and apparently not changed, had become hard and showed connective-tissue degeneration.

The author thinks that there is an essential difference between war injuries and injuries occurring in civil life. Probably because of the rapid penetration of the shot there is a primary injury to the nerve. A report will be made later of the ultimate results. FRANZ.

### Bowlby, A. A.: The Treatment of Wounds in War. Lancet, Lond., 1914, clxxxvii, 1427.

By Surg., Gynec. & Obst.

The author has had an unusual opportunity of studying the results of the present treatment of wounds in war, having been in daily attendance in one or other of the "clearing hospitals," or "clearing stations," as they are now to be called, to which the wounded are taken after being dressed in the field ambulances. They often arrive within a few hours of injury, but more frequently after a longer interval of 12 to 18 hours, and more rarely after the lapse of one or two days. Their powers of resistance to microbic infection are in many cases greatly lowered by the combined effects of shock from the injury, from bleeding, and from exposure to cold and wet, with prolonged starvation.

In discussing rifle bullet wounds, Bowlby says that the lacerating wounds of rifle bullets are easily mistaken for shell wounds. Instead of rifles being fired at from 800 to 1500 yards most of the rifle fire has been within 100 or 200 yards, while the great majority has been when the men were almost in contact or but a few yards apart. The effect of this has been to cause the most typical "explosive effects," so that he has seen the greater part of the muscles of the forearm torn and extruded through a huge rent in the skin and fascia, and that without

the bones being injured.

Shell wounds are further divided into wounds by shrapnel bullets and wounds by fragments of the shell case. The effect of the shrapnel bullet varies in proportion to the height of the shell from the ground when it explodes and the velocity of the shell at the same moment. If a shell bursts when it has lost its velocity and is high in the air, the bullets also are quite spent and may fail to penetrate even the clothing. But if the shell bursts close to a man, whole limbs may be shattered or even torn off, and the viscera may be so injured that death is practically instantaneous. A howitzer shell differs from shrapnel in that it contains no bullets, but only a bursting charge. The wounds are, therefore, caused by the portions into which shell is shattered by the explosion, and while some of these pieces may weigh several pounds, others may be smaller than a bullet. The wounds caused by these shells are the most horrible of all, and prove fatal much oftener than shrapnel wounds. Large portions of clothing covered with mud are frequently thrust deep amongst the torn muscles, and gravel or soil may also be carried in by the shell.

The exigencies of war do not ordinarily permit of any equipment at clearing stations except that which can be easily removed at the shortest notice. and, as no tents or huts can be supplied, use has to be made of any available space or building. The accommodation varies from a barn or a railway waiting-room to a town hall, or a church, or a school or college. There are ordinarily no beds, and the patients lie on the stretchers on which they were carried in, but there are always obtainable in the towns some beds for each of the "stations." The clearing station is equipped to provide for 200 cases, but it will be some indication of the pressure if it is realized that a single station has on several occasions dressed in 24 hours more than 1000

wounded.

Bowlby states that "aseptic" surgery has not been practiced at the front, but antiseptics are always used in every clearing hospital. The usual routine for all flesh wounds which are of the punctured variety, and for all abdominal or thoracic wounds, is to paint the skin far around with 2 per cent spirits of iodine, and to wash the wound itself with either carbolic acid I in 20 to I in 40, iodine from 1 to 2 drachms to the pint, or with strong peroxide of hydrogen. The dressings have always been "antiseptic." If there has been an extensive fracture, especially of the leg or thigh, with laceration, then, whenever it has been possible, the patient has been anæsthetized and the wounds have been enlarged and washed out with antiseptics, and broken bone has been removed and drainage pro-

It is not unusual in a clearing station to treat a hundred or more compound fractures besides caring for five or six hundred other men shot through the chest, the abdomen, the head, etc., during the course of the day. Many wounds suppurate, and he believes that the most skillful treatment would not prevent many of the worst wounds from suppurating, for these are the very patients whose arrival is liable to be unavoidably delayed because they are so severely injured; and their wounds are contaminated before arrival, not by the "clean dirt" of the sun-dried veld, but by a highly septic and manured soil. D. C. BALFOUR.

## **GYNECOLOGY**

#### UTERUS

Reynolds, E.: Forward Fixation of the Cervix as a Predisposing Cause of Some Retrodeviations of the Uterus, and an Operation for Its Release. Surg., Gynec. & Obst., 1914, xix, 588.

By Surg., Gynec. & Obst.

The uterine ligaments are not true ligaments but are reflections of peritoneum containing unstriped muscular fiber. This, though new to some gynecologists, has long been accepted by systemic anatomists and is indeed shown by the active retraction of these tissues when divided during operation. The uterus as a whole is sustained by these muscular fibers. The cervix is the only portion of the uterus which is attached to periosteum by inelastic tissues; viz., the strong anterior vaginal wall and Goffe's ligament. Anteflection of the cervix is an arrest of development which always includes a shortening

of these rigid structures.

This shortened attachment holds the vaginal portion of the anteflexed cervix firmly forward, while the supravaginal cervix is at the same time steadied from side to side by the powerful muscular action of the lower portions of the broad ligaments along the uterine arteries, and drawn backward by the almost equally powerful uterosacrals. The fundus in its turn is held forward by the disseminated muscular fibers in the upper part of the broad ligaments and the occasional action of the round ligaments. Such a uterus has an intrinsic angle situated at about the internal os, but with the vaginal cervix fixed forward and with the fibers in the vicinity of the round ligaments drawing the fundus forward, the action of the muscular uterosacrals in drawing the middle of the organ back tends constantly to an exaggeration of this angle. With the onset of the catamenial congestion the uterine walls engorge with blood and under primary hydrostatic laws the organ tends to resume its normal shape; i.e., to efface any increase of angulation due to the action of these muscles. Under these conditions, with the cervix fixed forward and with the uterus trying to straighten itself, the fundus would of necessity turn backward were it not for the muscular action of the round ligaments and the unstriped fibers which accompany them. If, then, at any moment this action relaxes, even temporarily, the fundus must of necessity move backward; that is, with the cervix, the lower pole of the organ, fixed forward to an abnormal degree, any straightening of the organ under the influence of the menstrual congestion of necessity throws the fundus backward in some degree, though not always enough to constitute a retroversion; but it has long been known

that the moment the fundus moves backward even in a small degree it receives the effect of the general intra-abdominal force on its anterior face and therefore tends to move further backward; i.e., to assume the first degree of retroversion, which then tends to

become progressive.

This mechanism creates a tendency toward the production of retroversion from slight accidents which would not be able to affect it in other cases. A series of observations extending over five or six years has convinced Reynolds that with the exception of cases due to neoplasms and salpingitis the retroversions do not ordinarily occur except in women in whom the cervix has more than the normal degree of forward fixation.

This condition is remedied by a transverse incision in the anterior vaginal wall with an extensive division of the tissues anterior to the cervix by blunt dissection, transverse suture of the transverse wound in order to lengthen the anterior vaginal wall, and a discision of the posterior lip, best performed by the removal of a lozenge-shaped portion of the lip. The operation is described in detail.

Fullerton, W. D.: Uterine Sarcoma. Surg., Gynec. & Obst., 1914, xix, 711. By Surg., Gynec. & Obst.

Primary sarcoma of the female genitalia is almost invariably of the uterus and ovaries. In the uterus they arise from the endometrium, uterine wall, or from a myoma, and originate from either the fibrous or muscle tissue. Sarcoma of the endometrium is the most common type of uterine sarcoma, occurring in one-third of all cases.

Two-thirds of the women with uterine sarcomata are below the average in child-bearing, have not reached puberty, or have not borne children for a long time. Compared to carcinoma they occur relatively early or late in life and are more common in nulliparæ. About 2 per cent of fibromyomatous tumors of the uterus show sarcomatous transformation. The diagnosis before operation is difficult or impossible. With malignant change the tumor increases more rapidly in size, is softer, and may give added symptoms, which, however, are often late in appearing.

On section the sarcomatous part of the tumor is softer, more yellowish white in color, and contains less fibrous tissue than the non-malignant part of the tumor. Irregularity in outline and lack of encapsulation are notable, as are small areas of necrosis and interstitial hæmorrhage. The symptoms are in general those of carcinoma, though they are usually of later occurrence. Pain is a more common symptom; bleeding and watery discharge may

be more profuse, and metastases are of later occurrence.

The treatment is complete hysterectomy as soon as the diagnosis is made from curettings or otherwise. The results are more satisfactory than with carcinoma, as metastases are of later occurrence.

Benign myomata without symptoms should not be removed for fear of future sarcomatous degeneration, for here the operative mortality is twice as great (5 per cent) as the probability of the myoma becoming malignant. Two cases are reported with detailed microscopic study.

Pestalozza, G.: The Determination of the Viscosity of the Blood in Some Tumors of the Uterus and Ovary (La determinazione delle viscosità del sangue in alcuni tumori dell'utero e dell' ovaio). Ann. di ostet. e ginec., 1914, i, 360. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author used Hess' viscosimeter and Riva Rocci's sphygmomanometer. His experiments were made on women with myoma and carcinoma of the uterus and cysts of the ovary, and only in cases where diseases of the heart and kidneys were excluded. He made 22 experiments on patients with myoma and for comparison 7 experiments on cases of pregnancy in the third and fourth month. determination of the sphygmoviscosimetric coefficient may be helpful in the differential diagnosis between myoma and pregnancy; in myoma the viscosimetric value is decreased, the sphygmometric increased. The determination of the viscosimetric coefficient in carcinoma — 16 experiments — is valuable only in conjunction with other clinical methods of diagnosis. In cysts of the ovary it has no value, as determined by 9 experiments.

Sherrill, J. G., and Griswold, A. V.: Uterine Fibro-myoma, Gastric Ulcer, Hysterectomy, and Gastro-Enterostomy. Internat. J. Surg., 1914, By Surg., Gynec. & Obst. xxvii, 411.

The authors, while performing a hysterectomy for uterine fibromata, found an indurated mass near the pyloric end of the stomach. From the history of the case and the fact that there was no glandular enlargement, the diagnosis of an ulcer seemed probable, and a posterior gastro-enterostomy was successfully made. L. K. P. FARRAR.

Lee, E. W.: Complete Calcareous Degeneration of a Uterine Fibroid. Internat. J. Surg., 1914, xxvii, By Surg., Gynec. & Obst.

Lee reports the removal of a large pedunculated uterine fibroid, which had undergone complete calcareous degeneration, from a patient on whom he had, seven years previously, incised and evacuated several nodular calcareous cysts of the cervix. He considers it of considerable interest that although the fibroid had undergone complete calcareous degeneration there was an absence of calcareous deposits elsewhere in the body and no evidence of arteriosclerosis. L. K. P. FARRAR.

Gerstenberg, E.: Concentrated Formalin, as the Most Certain and Most Rapid Acting Chemical Substance in the Treatment of Climacteric Bleeding (Konzentriertes Formalin, das am schnellsten und sichersten wirkende chemische Mittel zur Behandlung klimakterischer Blutungen). Zentralbl.f. Gynäk., 1914, xxxviii, 1201. By Surg., Gynec. & Obst.

Following the example of Winckel and Menge 20 and 15 years ago respectively, the author has used concentrated formalin in cases of idiopathic climacteric bleeding with excellent results. He believes that the application of the formalin is better than any of the other therapeutic measures employed, such as curettages, atmocausis, and zinc chloride application. He is finally convinced that if bleeding persists after a double application, 5 minutes apart, of formalin, there is something else as the cause, most commonly myoma. It is not to take the place of X-ray therapy; but, as the latter is expensive, an application of formalin may precede it, causing an immediate cessation of the bleeding, permitting a much shorter X-ray treatment.

He has only two failures to report and both cases were due to distinct pathological causes, one due to a polyp which was overlooked and left in the uterus and the other to a benign adenoma of the corpus of a prolapsed uterus. Neither case was

adapted to the treatment.

The technique is as follows: The vagina is wiped dry with sponges. The formalin is introduced on cotton on a Playfair sound at two 5-minute intervals for a period not to exceed 50 seconds in total. the cotton having been held in the formalin solution for at least 10 minutes. The cervix is not sponged before the introduction of the formalin. The bloody formalin solution must be carefully wiped up as necrosis of the vagina may occur. A tampon is therefore introduced into the vagina and pressed firmly against the cervix. Douches may be given 2 days later; until then the treatment consists in rest in bed and cold applications to the abdomen.

L. A. JUHNKE.

Hirschberg, A.: Vicarious vs. Complementary Menstruation (Über die vikariierende bzw. komplementäre Menstruation). Zentralbl. f. Gynäk., By Surg., Gynec. & Obst. 1914, xxxviii, 929.

Just as pregnancy influences the entire female organism causing changes in organs distant from the pregnant uterus, so is menstruation a phenomenon which influences the entire female organism, not merely a periodical uterine hæmorrhage. We know now that menstruation is not a mere local phenomenon, but only the most prominent external symptom of a process influencing the entire organism. Perhaps the theory is proved that the harmonious interaction of the various internal secretions is the one factor which produces them. Like Bromwell Branch, the author believes that each individual disturbance of this harmonious interaction leads to menstrual anomalies — a particular functional disturbance being, as has been proved, a disturbance of the calcium metabolism.

Menstruation usually manifests itself in general bodily and psychic symptoms, as pains, irritability, etc., and the appearance of bloody flow from the genitals. This blood, according to Hirschberg, comes from the mucous membrane of the uterus and tubes. Occasionally, however, this bloody flow makes its appearance from other extragenital organs instead of from the uterus and tubes. This is termed vicarious menstruation and has been observed repeatedly. In most cases this vicarious menstruation occurs from previously present orifices; i.e., the mucous membrane. According to Baumgarten and Küstner, a pure vicarious form of menstruation is rare, in most cases the vicarious form of menstruation alternating with the normal form. An extragenital form may, however, accompany the normal menstrual flow and this is called by the French "complementary menstruation."

The author then reports a case in which for 10 years, from the seventeenth to the twenty-seventh year, complementary menstruation occurred from both mammæ during each normal period. mammary bleeding was accompanied with drawing pains in the mammæ and lasted 6 to 7 days; whereas the uterine bleeding lasted only 3 to 4 days. The mammary bleeding suddenly ceased 4 years ago and has not reappeared. Whether this phenomenon lasting 10 years was dependent upon an internal secretive disturbance, or whether, as Jaschke believes, it depended upon a vascular neuroses, remains to be determined. L. A. JUHNKE.

Gumprich, G.: The Influence of Menstruation on the Blood Picture in Normal Individuals (Der Einfluss der Menstruation auf das Blutbild bei gesunden Individuen). Beitr. z. Geburtsh. u. Gynäk., 1914, xix, 435. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The previous reports on the condition of the blood picture were variable. The author examined the hæmoglobin content and the blood picture for five to six months in women who were menstruating regularly. The blood was taken twice to four times during the period and five to seven times in the intermenstrual period. The counting was done by Burker's method, the staining by May-Grunwald's. By curves and tables the author showed that there were no changes in the hæmoglobin content and that neither erythrocytes nor leucocytes showed uniform changes; the leucocytes often rose during the period. Every woman has a typical eosinophile curve: in one case there may be a rise, in another a fall, while a third may remain stationary. RITTESHAUS.

Rieck: Treatment of Amenorrhœa (Zur Therapie der Amenorrhöe). Zentralbl. f. Gynäk., 1914, By Surg., Gynec. & Obst.

The amenorrhœa which the author discusses here is not that associated with chlorosis, severe anæmia,

tuberculosis, or other constitutional ailments, in which the amenorrhœa usually leaves impairment of the general condition, but he speaks of the idiopathic form dependent upon functional disturbance of the uterus or ovaries or both. Under amenorrhœa he included those cases of oligomenorrhœa dependent upon the same cause and appearing in two forms: (1) a very slight flow lasting a day or less, and (2) a very slight flow every 3 to 4 months.

The symptoms in girls and women in the twenties were of local nature, cramplike abdominal pains, sacral pains, dizziness, headaches, fainting spells, and even epileptiform convulsions; whereas the symptoms in women beyond 30 years were more those of an anticipated climax: hot flashes, profuse sweating, general malaise, inability to work, and, above all, increased deposition of fat.

All these patients were first treated with hot douches to stimulate the atrophic uterus, later with ovarian or corpus-luteum extracts, without or in combination with iron preparations, and also massage and scarification of the cervix. By these measures a fair percentage of successes was attained.

Wherever improvement, however, was not apparent in 3 to 4 months the author used the intrauterine stem pessary in 22 cases. Details are given in regard to results obtained. In three cases failure resulted; in the other 19 cases distinct success was obtained. In 7 cases a pure amenorrhoea existed; 2 cases were in young girls and were of 4 to 5 years' duration. In 12 cases an oligomenorrhœa was present, the type of which was described above, extending over a period of 2 to 5 years.

The 7 cases of amenorrhœa were all cured, not only during the period of wearing the pessary, but they have since remained well. The pessary usually exerted its influence within 10 to 14 days, in more severe cases within 2 to 3 months. Similar results were obtained in the oligomenorrhoea cases, a marked increase in fluid appearing at the next

menstrual period.

The pessary remained in situ for 14 days to 8 years. Sometimes it was expelled spontaneously. and was removed twice, as the bleeding became too profuse. In some cases it was used interruptedly during the year. His aim was to employ the pessary 8 to 12 months, although good results were obtained in from 6 to 8 weeks. The symptoms disappeared in 14 of the 19 cases. In two cases absolutely no influence was exerted upon the dysmenorrhœal phenomena.

The author considers the intra-uterine stem pessary an excellent medium for curing functional amenorrhœa or oligomenorrhœa. It accomplishes this in the great majority of cases in which all other means fail. Its action is all the more certain in those cases in which the symptoms are severest. Its use is harmless and the functional improvement or cure persists after removal of the pessary.

L. A. JUHNKE.

Kosminski, E.: Treatment of Amenorrhœa with Extract of Hypophysis (Zur Behandlung der Amenorrhöe mit Hypophysenextrakten). Deutsche med. Wchnschr., 1914, xl, 1655. By Surg., Gynec. & Obst.

The treatment of amenorrhœa has been one of the most unsatisfactory fields in gynecology. Until recently it has been limited to measures to produce local hyperæmia of the sexual organs. In recent years, however, animal experiments have shown that there is a close relationship between the internal secretion of the hypophysis and that of the ovary. This seems to be shown, too, by the fact that there are marked changes in the hypophysis in pregnancy and by the pathological conditions in acromegaly and dysplasia adiposogenitalis. It may be regarded as proved that in diseases of the hypophysis the hormone is lacking that stimulates the ovary to activity. After removal of the hypophysis more or less marked atrophy of the ovary takes place. Therefore where there is a lack of balance between the hypophysis and the ovary amenorrhœa necessarily occurs.

A few authors have published cases of treatment of amenorrhœa with extract of hypophysis. Fromme treated 12 cases; in 5 menstruation was promptly reëstablished, 5 were failures and 2 doubtful, but in all the cases there was improvement in the subjective condition. Hofstaetter used the treatment in 33 cases, with success in two-thirds of them. Fries reports two cases successfully treated.

Kosminski reports 24 cases of his own, with success in 20 to the extent that menstruation was reëstablished. Permanent recovery for more than a year resulted in 6 cases; some of the patients have been lost sight of. Cases were excluded that showed general diseases, such as chlorosis, tuberculosis, Basedow's disease, etc. The cases treated were those showing infantilism, subinvolution of the uterus, adiposity, preclimacteric amenorrhœa, nervous diseases, such as neurasthenia and hysteroepilepsy and oligomenorrhœa from cold, disease of the adnexa, etc. Not more than 20 injections were given in any case, and after 10 injections there was an interval of a week. The urine was examined occasionally, for diabetes has been known to appear after long-continued hypophysis medication. There were no bad effects from the treatment. Kosminski thinks many cases of amenorrhœa are due to hypofunction of the hypophysis, and in cases where no other cause can be demonstrated hypophysis treatment should be given.

### Dorr, R. C.: Malformations of the Uterus and Vagina; a Case of One of the Rarest Forms. Med. Herald, 1914, xxxiii, 459. By Surg., Gynec. & Obst.

The following case of a rare condition is reported: The patient gave a negative family history. She was the mother of four children, all bright and healthy. A few days before examination she had an abortion, which was followed by infection. Upon examination a double vagina was found with the septum extending well between the large lips, with a fetid discharge coming from the left uterus. uterus was curetted and the perineum repaired. A year and a half later the patient was delivered of a healthy boy from the right uterus.

EDWARD L. CORNELL.

Jolly: Inversion of the Uterus (Über Inversio uteri). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 280. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The cause of inversion is to be found in pathological processes in the musculature of the uterus and in pathological relations between the wall of the uterus and the placenta. A case of inversion in placenta accreta is described, and a picture of a microscopical section of the uterus is given. There is complete lack of the spongy substance of the layer of mucous membrane between the placenta and the wall of the uterus. ALTSCHÜLER.

## Pressly, J. E.: Complete Inversion of Uterus. J. South Car. M. Ass., 1914, x, 735. By Surg., Gynec. & Obst.

The author reports a case of complete inversion of the uterus which he was called to see twelve hours after it had occurred. The midwife and others had mistaken the protruding mass for retained placenta and had made repeated attempts to pull it

No cervical ring could be detected, and after cleansing the uterus and vagina partial reduction was effected by moderate compression of the upper part of the mass with one hand while with the other the fundus of the uterus was pushed up by a pad of gauze on a dressing forceps. Complete reduction was not possible in this way but occurred spontaneously while the uterus and vagina were being irrigated with hot normal salt solution, presumably due to relaxation of the cervical ring from the heat. No further history of the patient is given.

S. A. CHALFANT.

#### Gardner, W. S.: Round Ligament Suspension of the Uterus; Fifty-Five Cases. Maryland M. J., By Surg., Gynec. & Obst. 1914, lvii, 296.

The author bases his report upon his own personal experience. He reviews the symptoms and the results obtained from the suspension of the uterus by the round ligaments either by the method described by Gilliam or by bringing the round ligaments up through or near the inguinal canal. In both classes the round ligaments were anchored to the fascia over the recti muscles. Only cases in which the retrodisplacement was the predominant lesion were included; all cases had reported, either in person or by letter, within a few months. No cases were included that had been operated upon less than one year. About 75 per cent of the patients had borne one or more children.

The symptoms observed in the order of their frequency were as follows: backache, dysmenorrhœa, pelvic pain, constipation, occipital headache, menorrhagia, irregular menses, disturbances of the nervous system, frequent micturition, painful micturition, nausea, and paroxysmal intermenstrual

Of the 55 patients operated upon 41 were entirely relieved. In 6 cases there was marked improvement, but not entire relief; in 6 cases the uterus was held in good position, but the symptoms continued. In 2 cases the symptoms were not abated, but it is not known whether the uterus retained its correct position. In not a single case examined was the uterus found out of position.

After discussing the cases which were not relieved, a short review is given of the treatment of retrodisplacements. The author thinks that very few cases can be permanently cured by pessaries. The ventral suspension, the Baldy-Webster, and

the Gilliam operations are discussed.

Of the ventral suspension he says that the frequent failure to retain the uterus in position, the occurrence of ventral fixation in place of the intended suspension, and the complications during pregnancy and labor in patients upon whom this operation has been done have caused it to be abandoned by nearly all surgeons. Polak's results with the Baldy-Webster operation are quoted, and the conclusion reached is that the operation is applicable to a very limited class of cases. The objections to the original Gilliam operation are that it creates two artificial pillars extending from the uterus to the abdominal wall, and that the line of traction is not in the normal line of the round ligaments. Both of these objections are overcome by bringing the round ligaments through the abdominal wall near their normal point of exit.

Malkowsky: Delivery in a Case of Septum of the Uterus and Vagina (Geburt bei Uterus septus et vagina septa). Festschr. f. Prof. Pobedinsky, 1914, 230.

By Zentralbl. f. d. ges. Gynäk, u. Geburtsh. s. d. Grenzgeb.

A primipara was delivered at the end of the seventh month with severe pains after rupture of the membranes. The vagina had a sagittal septum and two external orifices. In the course of delivery the vaginal septum ruptured. The child was born spontaneously and weighed 1,650 gms. The placenta, which had to be separated manually, was in the left half of the uterus, partly on the fundus, partly on the septum of the uterus. On the third day after delivery there were pains resembling those of labor, and the decidua of the right half of the uterus was discharged. JENTTER.

Bernard, F.: Treatment of Diseases of the Uterus and Adnexa at Mineral Springs (Traitement hydro-minéral des affections utéro-annexielles). J. de physiothérap., 1914, xii, 303. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Water from sulphur springs acts on the uterus and ovaries as an emmenagogue and a hæmostatic, at

the same time stimulating motion in the uterine musculature like secale, quinine sulphate, and electricity. The effect is on the nervous system. The nutrition of these organs is also stimulated. The indications are torpid affections with severe catarrh, such as herpes, syphilis, and scrofula. Contra-indications are erethistic forms of scrofula, and diseases of the liver, stomach, and intestines.

Sodium chloride spring water, with low, medium, or high mineral content, acts as an emmenagogue and predisposes to congestion. If discharge and pain are increased the treatment should be made less strenuous. It tends to clear up pelvic exudates. Mild attacks of pain announce the beginning of the desired leucocytosis. Indications for this treatment are lymphatic and scrofulous processes and exudates in which there is no fresh inflammation. Contra-indications are neurasthenia, dyspepsia, and enteritis.

Water from springs with a low, undetermined mineral content has a sedative action from its radioactivity. The treatment consists in full and sitz baths and rectal and vaginal douches - 38 to 50 to 55 degrees — mud vapor baths, and vapor douches.

Shoemaker, G. E.: The Present Place of Vaginal Hysterectomy in Pelvic Disorders; Summary of Fifty Consecutive Cases. Penn. M. J., 1914, By Surg., Gynec. & Obst.

Where hysterectomy is to be performed advantages are claimed for the vaginal operations in

the following conditions:

I. In very stout multiparæ with pendulous abdomens and relatively small disease areas low down. Here an abdominal incision must be very large, the field is very inaccessible through it, and the cosmetic results are not good, the scar often forming a great depression when the patient is in the upright position. It is very difficult to secure firm union.

2. In clinically suspicious conditions very early carcinomata, especially of the endometrium, thorough preliminary cauterization being done. The so-called precancerous conditions of the endometrium belong here. Where there is loss of weight, excessive and increasing bleeding near the menopause, with a chronic irritating discharge; where curettings show as yet no positive malignancy, but certain suspicious findings, the uterus is better out, and better to be taken out by the way of the vagina.

3. In certain cases of retroversion and descent in elderly women, with large cervix, diseased endometrium, and very large uterus. Not all of these require hysterectomy, but it is no more formidable than the long and complicated resections and plastic work which would otherwise be necessary and which would after all leave an endometrium of uncertain future.

4. Where no symptoms point to other organs and the disease is low down.

5. Where cosmetic results and future comfort are important.

6. Where, other things being equal, the route of the lowest mortality and lowest morbidity must be chosen. That route is vaginal in good hands. Probably because of woman's original adaptation to receive pelvic traumatism without shock, as in parturition, the invasion of the lower peritoneal cavity per vaginam and the necessary handling appear to disturb the normal balance less than an approach through an incision higher up.

7. When the preservation of the cervix and upper vagina are not important to that individual.

8. In stout women with poor heart and poor kidneys, who are not very good operative risks.

In fifty consecutive vaginal hysterectomies but two patients died, both from uræmia on the tenth day. Twenty-eight per cent were fibromata, 18 per cent were malignant, and 54 per cent were adenomata with hæmorrhage.

Carcinoma cases are considered to be most advantageously treated by the abdominal route or by

the combined method.

A number of malignant cases treated by vaginal hysterectomies have remained well ten to eighteen

years after the operation.

The author states that as experience has increased, the vaginal operation is considered safer than abdominal hysterectomy. The patients are more comfortable and better pleased afterwards. It is especially adapted to precancerous conditions late in life. Those submitted to it require selection, as it is not adapted to all. D. H. BOYD.

## Lilienthal, H.: The Relation of Gynecology and Urology to General Surgery. Med. Rec., 1914, lxxxvi, 872. By Surg., Gynec. & Obst.

While gynecology is only a division of general surgery, its boundaries are so vague that it appears very doubtful whether it is essential for the obstetrician to have any special knowledge or attribute not possessed by all educated surgeons. In the non-operative part of the work a technique and diagnostic skill may be developed as a result of daily and long-continued practice; but this is aside from the matter of gynecological surgery, and it can be acquired quite as easily by physicians not trained at the operating table.

With urology the case is somewhat different. This may be roughly divided into what the author calls "minor and major urology." The occasional cystoscopist will only be embarrassed and humiliated if he fails to enter the ureters in a difficult case, while on the other hand the so-called pure urologist who ventures without ample preparation into the domain of major surgery is liable to feel, in addition to mere embarassment, the qualms of

conscience.

Surgery has become far too broad for any man to know it all, and so specialism is inevitable, and as proficiency is attained in higher degree there will doubtless be more and more differentiation.

That portion of genito-urinary surgery which deals with the local treatment of the urethra, the

bladder and its appendages, and the ureters and kidneys, may be designated as minor urology. Certain operative procedures seldom requiring general anæsthesia should be included. As thus described, urology may be regarded as a legitimate specialty, for the prosecution of which great surgical experience is not necessary. If a trained surgeon has the inclination and opportunity to add technical urology to his accomplishments, there is surely no reason why he should not do so; but if, after years of exclusive specialism, he takes once more upon himself the responsibility of a major operation. he should make sure that the march of progress has not left him too far in the rear.

The conclusions are:

1. Operative gynecology should not be undertaken as a specialty except by those who have been fully trained in general surgery.

2. All general surgeons should be trained in

gynecology.

3. Diagnostic or minor urology may be undertaken by any qualified physician.

4. Major urology is only for the fully trained surgeon. EDWARD L. CORNELL.

### ADNEXAL AND PERIUTERINE CONDITIONS

Adachi, S.: The Occurrence of Doubly Refractive Lipoids in the Human Ovary and Uterus (Über das Vorkommen doppeltbrechender Lipoide in menschlichen Ovarien und Uteri). Zischr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 125.

By Surg., Gynec. & Obst.

Normally the infantile ovary contains variable amounts of fat stainable with Sudan III. Most of it is contained in the theca interna of the atretic follicles or the cysts formed from them. There are also single large fat-cells present throughout the ovarian tissues. Doubly refractive lipoids occur in the theca cells. They are present most often in the form of crystals, more rarely in droplets. Thus, the occurrence of either fat or lipoids, the latter being an accompanying phenomenon in the massing up of fats, is not of pathological origin in the infantile ovary. Much the same is true of the adult organ. In it the fat-cells with doubly refractive lipoids are especially abundant about the corpora albicantia. The author could not determine during what ages the fat and lipoid contents increase or decrease respectively in the ovarian tissues. he finds that they are most abundant about the corpora albicantia of those individuals who are in the early periods of sexual activity.

Ovaries obtained in the early puerperium show that the lutein cells of the corpus luteum graviditatis contain more or less distinct fat-droplets, usually few in number. With the progressing degeneration of the lutein cells these droplets appear within connective-tissue cells and leucocytes. Doubly refractive crystals are usually absent at this time but reappear in the later stages of the corpus luteum

changes.

The infantile uterus normally contains very little fat and no doubly refractive lipoids. In the adult uterus the latter were seen in small numbers wherever hæmorrhages had occurred. In the older individuals small fat-droplets may be seen at the poles of muscle-cells. This phenomenon becomes more apparent with the progressing senile atrophy of the organ. None of these fat-droplets ever show double refraction. A process similar to this seems to occur during pregnancy. In the later peurperium large amounts of fat-cells but with doubly refractive crystals are seen, which seems to be fairly characteristic of this stage. The condition is generally more marked in the interstitial than in the muscle tissue.

The origin of the lipoids in question seems to point to the cholesterin-ester group or cholesterinfatty-acid compositions. Whether the cholesterin products are present primarily or formed secondarily in the neutral fats the author is unable to prove. His hypothesis is that the changes which normally take place in the lutein cells have to do with the throwing out of fat substances, which in turn are taken up by leucocytes and connective-tissue cells, and here undergo further changes. L. A. EMGE.

### EXTERNAL GENITALIA

## Field, T. S.: Pathological Vaginal Discharges. d, T. S.: 1416-15 J. Fla. M. Ass., 1914, i, 165. By Surg., Gynec. & Obst.

Field reports his deductions gathered from one thousand cases and summarizes his conclusions:

1. Every case of leucorrhœa demands a careful macroscopical examination of the generative organs and a microscopical examination of the discharge.

2. Chronic gonorrhœa is too often overlooked

for want of careful microscopy.

3. Changing the reaction of the discharge seems to be of some value in treatment.

4. Iodine is the best agent in treating these conditions.

5. Vaccines are of little value and cannot be depended upon.

6. Curettage is never indicated by itself as a treatment for leucorrhœa.

7. Every discharge from the vagina or cervix other than the normal menstruation, normal lochia, and the mucous discharges ante-partum are abnormal and have a pathological basis. The cause is always local and usually in plain sight.

8. No doctor does his duty if he allows a patient complaining of leucorrhœa to leave his office without having been thoroughly examined, or if he examines such a patient without taking slides for

microscopical diagnosis.

The author emphasizes the fact that endometritis is a rare condition causing leucorrhea, and that curettage is more a danger than a cure. Also a thorough examination, both macroscopic and microscopic, should be made in all cases in order to EUGENE CARY. make an accurate diagnosis.

### MISCELLANEOUS

MacNaughton-Jones, H.: Expectancy and Expediency in Gynecology. Med. Press & Circ., 1914, xcviii, 562. By Surg., Gynec. & Obst.

The author rather condemns the "wait-and-see" policy, and advocates operation in pelvic conditions and in this way alleviating much suffering. All curettings should be examined for malignancy.

A communication of Pinch as to the use of radium

emphasizes the following points:

1. It is absolutely wrong to regard radium as a cure for cancer of the genitalia, though in many cases of fungating and ulcerating carcinoma of the cervix the results are marvellous, exceeding any other known method of treatment. He instances cases in which the symptoms have been in complete abeyance for two years.

2. Treatment of epithelioma of the vagina and vulva is less satisfactory; that attacking the mucous membrane is the more intractable. He quotes a case, however, in which the disease, microscopically verified, has, up to the present, been completely

3. He has known cases in which the disease which was pronounced inoperable was rendered operable by radium treatment.

4. He is of the opinion that exposure to radium after operation, though not positively preventing

recurrence, does delay it.

5. After extensive pelvic operations, as, for example, Wertheim's, the greatest care must be taken to calculate the doses accurately; otherwise, owing to the widespread impairment of the atrophic nerves, extensive tissue destruction may follow.

Arrest of growth and reduction in size, with the spontaneous cure of a myoma, do very rarely occur, but so seldom that this fortunate solution cannot be taken into serious consideration in treatment. One factor in the success of operation must be clearly kept in mind and impressed on the patient and friends: delay impairs the health, lessens resistant vitality, and also allows local complications to occur, which increase the severity and length of the operation and the final percentage of its risks. EUGENE CARY.

Zweifel, P.: Experiences with Mesothorium Treatment (Erfahrungen mit der Mesothoriumbehand-Zentralbl. f. Gynäk., 1914, xxxviii, 1089. By Surg., Gynec. & Obst.

The author describes the effect of mesothorium on vulvar cancer. The disappearance of the cancercell can be traced through the various stages until practically nothing but connective tissue can be seen at the end of the treatment. That the action is selective in character is manifested by the poor staining of the cancer-cells, whereas the tissue cells take practically normal staining characteristics. Too much significance, however, should not be attached to this selective action, because symptoms such as colic, drawing sensations, and accumulations of gas speak for bowel injuries.

Whether we can speak of cures of cancers situated in deeper-lying organs, as cervical cancers, time alone can decide. It is interesting to note whether the action of mesothorium is truly selective or whether it depends upon the accompanying inflammation of surrounding tissues. The fact that surface cancers have disappeared after an attack of erysipelas has been conclusively proved. A retrogression of deeper-lying cancers as a result of deep inflammatory conditions has also been observed, but later observations have always shown a redevelopment of the cancer with resultant death.

It is difficult to determine whether the action of mesothorium is truly selective for cancer-cells or whether the benefits obtained are due to the inflammatory condition in the pubis induced by the mesothorium. In case after case the cancer-cells degenerate and are absorbed, which leads to the hypothesis that these absorptive products may have an action similar to that of the autolysates.

At any rate the treatment with radio-active substances is so necessary and useful in inoperable cases that it should be employed and given a thorough trial. It is only through multiple observations carried on by many men that a definite conclusion can be reached as to whether we may hope for permanent cure.

L. A. Juhnke.

## Dickinson, R. L.: The New "Efficiency" Systems and Their Bearing on Gynecological Diagnosis. Am. J. Obst., N. Y., 1914, lxx, 865.

By Surg., Gynec. & Obst.

The author concludes that if the methods of Taylor's "Scientific Management" should prove adaptable to "health factories," as, for example, in dispensary, and hospital, and office group diagnosis, responsibilities would then be recast by "function"; processes would be standardized and reduced to writing; instructions carried out thoroughly; an inspector would check up everyone's results; and the whole be preceded and constantly accompanied by detailed studies of time and waste motion.

An outline of an interview with Frank B. Gilbreth is given, with a chart of functions. Suggested standards are listed and examples of printed forms submitted, such as a preliminary history to be taken by the patient herself, and directions as to gravida and women at forty. Reference is made to coöperative methods as instanced in the associated out-patient clinics of New York; in the plans of the Hospital Efficiency Committee of the Philadelphia County Medical Society representing fifty-five hospitals; in the great Mayo building and in associations of doctors.

C. H. Davis.

### Albrecht, H.: The Use of Coagulen in Gynecology (Die Anwendung des Koagulen in der Gynäkologie). Zentralbl. f. Gynäk., 1914, xxxviii, 1185. By Surg., Gynec. & Obst.

Coagulen is a substance promoting coagulation of blood, made by Fonio in Kocher's clinic from animal blood-platelets by fractional centrifugalization. It contains the coagulation-promoting substance from the platelets called "cytozyme" which in contradistinction to the "serozyme" of the bloodplasma is thermostabile. The preparation is now produced commercially by the Association for Chemical Industry of Basel.

Fonio described it as a substance for promoting coagulation rapidly and effectively. Its efficiency was proved by test-tube experiments as well as by subcutaneous and intravenous injections intravitam, when the effect lasted about one hour, decreasing the coagulation time of the entire blood

mass considerably.

The author employed the coagulen in gynecology after reading of the excellent results published by Fonio and later corroborated by Kocher and

Enderlen from the surgical side.

The substance is a powder which is always freshly prepared as a 10 per cent solution in normal saline for use. It may be boiled 2 to 3 minutes without impairing its activity in the least. Locally, the blood is first sponged away and with a syringe the fluid is forced against the bleeding spot with considerable pressure and a sponge applied and held there a short time. If this fails a sponge saturated in the solution is firmly applied against the bleeding spot and held there a short time.

The author's conclusions are as follows: The substance is very effective and acts promptly in all oozing from flat surfaces and in parenchymatous hæmorrhages, but has little or no effect in arterial or severe venous hæmorrhages. The latter is easily explained, as the substance, like any ordinary clot, is washed away by the blood under pressure. No good results were obtained in vaginal operations, plastic operations, or in vaginal sections, nor in menorrhagias and atonic hæmorrhages.

The tamponade with a saturated sponge in a

carcinomatous crater also produced no appreciable

effect on the hæmorrhages.

Excellent effect, however, was obtained by its employment in abdominal operations in which surface bleeding occurred in the cul-de-sac or from the raw surface of the bowel following separation of adhesion. It is, therefore, an extremely valuable substance in severe laparotomies with dense adhesions to check the oozing effectively and in a short time, preventing secondary hæmorrhages and the necessity of prolonging the time of operation to secure thorough hæmostasis.

He further employed it in essential hæmorrhages of girls with decreased coagulation time, injecting 4 gm. of a 5 per cent solution intramuscularly into the thigh. The coagulation time was not increased after a period of 10 hours. Furthermore, the subcutaneous injections were extremely painful and were not repeated. Fonio later advocated its employment diluted in physiological salt solution, thus decreasing the pain incident to the use of the concentrated solution. This apparently would be of value in cases with considerable shock due to loss of blood following prolonged operations.

The author concludes that coagulen is a valuable substance in operative gynecology if used in a 10 per cent sterile solution for oozing from flat, raw surfaces as well as for bleeding from parenchymatous organs.

L. A. JUHNKE.

Pierra, L.: Pelvic Neuralgias (Les névralgies pelviennes). J. d. sages-femmes, 1914, xlii, 75.
 By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The pain in pelvic neuralgias is generally continuous with periodic exacerbations. The seat of the pain as felt by various patients is different. The entire pelvis may be sensitive or the pain may be referred to the uterus or ovary. Neuralgias in the pelvis show no tendency to spontaneous recovery. The painful points may be found on examination, and they vary according to the nerve involved. The following nerves may be involved and each has its pain-points: the ilio lumbar, the most frequently involved; the obturator; the femoral; the nerve of the levator ani; the internal pudic; and the sciatic. The treatment is general and local. In local treatment hot baths have proved the best.

Martin, A.: The Stem Pessary (Der intrauterine Stift). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 665. By Surg., Gynec. & Obst.

The stem pessary has fallen into disrepute because it has been so frequently used to prevent conception, but Martin believes that it has a legitimate use in certain cases of amenorrhoea and oligomenorrhoea, especially those caused by infantile development of the uterus. He has had excellent results in such cases and has never seen any harm result when strict asepsis was observed. A. Goss.

Stokes, A. C.: Diseases of the Urinary Tract Produced by Diseases of the Genital Tract in the Female. J.-Lancet, 1914, xxxiv, 593.

By Surg., Gynec. & Obst.

The author aims to show that diseases of the genital tract in a certain number of cases produce pathology in the urinary tract of the female; for example, pelvic cellulitis, tubal infections, tumors and the like may produce bladder displacement, or adhesions of the ladder to the abdomen or genital viscera, or in some cases may produce obstructions to the ureter by connective tissues pulling it out of place. He believes that many diseases of the urinary tract are mistaken for diseases of the genital tract; cases are cited where operations have been done on the genital organs for hydronephrosis, while hydronephrosis was not the real cause of the trouble. He is of the opinion that operations done on the genital organs have in some cases produced trouble in the kidneys and ureters following the same.

Six cases are cited showing various combinations of these two conditions.

#### **OBSTETRICS**

#### PREGNANCY AND ITS COMPLICATIONS

Gilbert, J.: Report of a Case of Extra-Uterine Pregnancy. Texas St. J. Med., 1914, x, 272. By Surg., Gynec. & Obst.

Gilbert describes a case of ectopic gestation of two and one-half to three months' duration in a patient 25 years of age who had been married four years and had borne one child two years previous to her present pregnancy. The last menstruation occurred October 4, 1913, and on November 27, 1913, she had an attack of sharp abdominal pain, which was followed shortly by a uterine hæmorrhage. The condition was diagnosed as an abortion, and the uterus was curetted. On January 6, 1914, she first came under the author's care. Operation was at once advised and performed. An abdominal section disclosed a ruptured gestation sac, from which protruded a two and one-half to three months' fœtus. The sac was adherent to the right tube, ovary, uterus, bladder, and cæcum, but was shut off from the general abdominal cavity above by the omentum, which had become adherent to the bladder and pelvic peritoneum. The patient made a good recovery. L. K. P. FARRAR.

Thwaits, J. A.: Eclampsia. South African M. Rec., 1914, xii, 366. By Surg., Gynec. & Obst.

The author thinks that autopsy findings show the effect rather than the cause of the toxæmia, and he calls attention to the fact that investigators are diverting their attention from the kidney to the

placenta and ductless glands.

He gives 20 per cent as the maternal mortality and 50 per cent as the fœtal. In considering the prognosis the following are taken to be unfavorable signs: Deep coma coming on after only one or two attacks, complete anuria, hæmoglobinuria, and continuous high temperature. When the pulse, which is full and strong at the commencement of the attack, becomes soft and frequent and the sighing grows more marked, the prognosis is extremely grave. Increased excretion of thin light urine is a sure sign of recovery. He recommends rapid delivery.

A. C. Beck.

Hull, E. T., and Rohdenburg, G. L.: Experiments in the Etiology of Eclampsia. Am. J. Obst., N. Y., 1914, lxx, 919.
By Surg., Gynec. & Obst.

The authors summarize their experiments and apply them to the interpretation of the etiology of eclampsia as follows: Bacterial disease and intentional injection excepted, pregnancy is the only condition in which complex protein material is introduced into the general circulation parenterally.

r. Ferment active homologous protein when introduced parenterally induces extensive degeneration of the liver, and, as a rule, but slight degeneration in the kidney. These lesions probably are equivalent in the rabbit to those seen in the organs

of the eclamptic human female.

2. Homologous protein, boiled to destroy the enzymes and then parenterally introduced, produces, as a rule, but slight lesions in the liver; it damages the kidney, however, to a marked degree, as evidenced by enormous quantities of albumin and all kinds of casts in the urine. The animals die in convulsions and coma, reproducing the symptoms of eclampsia in the human subject.

3. Leucin, one of the products of autolysis, produces on injection a marked degeneration of the liver both in rats and in rabbits. In the rat, degeneration of the kidney also is induced, though this does not occur in the rabbit. The boiled cells are killed before leucin can be formed, hence hepatic degeneration after their injection is minimum.

From their observation as stated above the authors believe that eclampsia develops in the following sequence: An overload of fœtal elements is thrown into the circulation, and, whether in the circulation or not, is autolyzed with the formation of an excess of leucin. The excess of leucin injures the hepatic vessels with consequent thrombosis, cloudy swelling, local necrosis, and more or less complete autolysis of the liver-cells. The renal changes are probably due in part to other products of autolysis, and perhaps also to protein fractions incompletely broken down by the liver. The experiments further suggest that a negative protective ferment in a known pregnant animal and a determination of the leucin content of the blood will prove to be diagnostic procedures of value. It is possible that a negative action so often noted in eclampsia, both in man and in animals, is due to the inhibition of the activity of the ferments by an excess of their own products.

Ward, F. N.: Report of Twenty-Eight Cæsarean Sections Without a Death. J. Am. Inst. Homæop., 1914, vii, 499. By Surg., Gynec. & Obst.

The author presents her record and technique of 28 cæsarean sections which were performed for various conditions, with no mortality rate for the mothers nor for the full-term infants; in six other cases the child was not viable at the time of the operation, which was done solely in the interest of the mother. The indications for the operation varied greatly, and were due in a few instances to the faulty presentation of the fœtus, but were more often due to pelvic deformities or obstruction in the

birth-canal of the mother, as by fibroids or cicatrical tissue in the cervix or in the vault of the vagina, and in 5 instances to placenta prævia; in 7 cases the indication lay in the constitutional system of the mother, renal deficiency being the cause 4 times, cardiac failure once, and pernicious vomiting twice. In one instance a fracture of both femurs necessitated the operation. Of the 28 cases operated upon 18 were primiparæ, 10 were multiparæ; the oldest was 45 years of age and the youngest 16.5 years. In 10 cases the operation was the method of choice, but in 18 cases the patients were allowed to undergo the test of labor, or the operation was performed as

the result of a complication of labor.

Ether is the only anæsthetic used, and is given by the drop method, being preceded by a hypodermic of morphine, 1/4, and atropine, 1/125. The abdomen is painted with 5 per cent iodine, and the incision is made to the right of the median line, three-fourths of its length being above and onefourth below the umbilicus. The uterus is incised in the median line, as high in the fundus as possible, and the placenta, if encountered, is pushed aside or divided; the membranes are ruptured, the presenting part grasped, and the child delivered. After the removal of the placenta, the uterus is brought outside the abdomen, surrounded by gauze pads wrung out in warm saline solution, and the incision is closed by interrupted sutures of linen thread, introduced about one-half inch apart with a curved Martin needle sufficiently large to penetrate with one stitch the contracting uterine wall down to the decidua. A second row of Lembert sutures of fine linen thread unites the peritoneum above. The abdominal wall is closed with unusual care; no packing is used in the uterus or cervix, and no ergot is found necessary to insure uterine contrac-

In conclusion, Ward points out the necessity of careful study and recognition of suspected and abnormal obstetrical lesions before labor begins.

If the patient is of the borderline type and is to be permitted to undergo the test of labor, she should be kept surgically clean, with no experimental manipulations, and with as few vaginal examinations as possible, conducted under the most rigid asepsis. The operation should be performed before the patient's resistance is lowered.

Attention is called to the value of linen sutures which remain in the uterus, as in stomach and intestinal suturing, ensuring a uterine scar of uniform integrity.

L. K. P. FARRAR.

Rachmanow, A. N.: Thirty Cases of Classical Cæsarean Section (30 Fälle von klassischer Section cæsarea). Zentralbl. f. Gynäk., 1914, xxviii, 900.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Among 25,000 deliveries there were 30 cæsarean sections, 23 of them performed after labor had begun. Only five cases were not examined internally; in 25 cases the membranes were not ruptured,

rr were primiparæ, 19 multiparæ. The results were that 28 of the mothers and their children lived, and 26 of these cases were entirely without complications. Two mothers who had been repeatedly examined outside the hospital by unclean hands died of sepsis. In 28 cases tubal sterilization was performed also. Cases that are suspected of infection should be excluded from cæsarean section or any of its modifications. Pure cases are those in which the membranes are not yet ruptured, and cæsarean section may be performed in these even if the temperature is 38°, if the pulse is slow. Early admission to the hospital is desirable, so that adequate preparation may be made

Graeupner.

Thompson, W. L.: The High Incision in Cæsarean Section. Bull. Johns Hopkins Hosp., 1914, xxv, 336. By Surg., Gynec. & Obst.

In cæsarean section the author favors the high incision in the median line, above the umbilicus, after the well-known method of Davis, claiming for the procedure that (1) the incision above the umbilicus receives better reinforcement from the recti muscles than in the lower abdominal wall, and that its location precludes all possibility of adhesion between it and the contracted uterus; (2) the incision through the thick muscular fundus, rather than through the attenuated lower uterine segment, minimizes the danger of rupture of the uterus in

subsequent labors.

Thompson advises leaving the uterus in situ as less productive of shock, and packing off the intestine with Mickulicz's pads wrung out in hot saline solution to prevent the handling and also the contamination of the intestine by possibly infected liquor amnii. He closes the wound in the uterus with two layers of interrupted sutures of chromic catgut inserted one centimeter from the edge of the wound and passed down to, but not through, the decidua and tied more tightly than sutures in ordinary wounds to allow for the contraction of the uterine muscle. The peritoneum is then drawn over the wound by a running suture of catgut and the abdominal incision closed in the usual way, except that the skin incision is united by a subcuticular stitch of silver wire, to be removed on the seventh to the ninth day, thus avoiding the unsightly needle holes in the abdominal wall.

L. K. P. FARRAR.

Sselitzky: Vaginal Cæsarean Section; the Question of Later Deliveries (Der vaginale Kaiserschnitt; zur Frage über die nachfolgenden Geburten). Festschr. f. Prof. Pobedinsky, 1914, p. 191.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Sselitzky reports 17 cases of vaginal cæsarean section, 11 of them in eclampsia, without a death. Vaginal cæsarean section is indicated in eclampsia, premature separation of the placenta, placenta prævia, pernicious vomiting, diseases of the kidneys and heart, and delayed delivery, and it may also be indicated in local diseases, such as rigidity of the os,

stenosis of the cervix, and new-growths, such as cancer and fibroma.

The fear formerly felt that later births would be interfered with by cæsarean section has not been confirmed. The operation does not leave behind it any functional disturbances or anatomical changes. To the 46 already published in the literature the author adds 4 cases of his own of subsequent delivery without any difficulty. All the deliveries were full-term and the children normally developed.

Wahrer, C.: Hysterotomy as a Method of Terminating Pregnancy. J. Iowa St. M. Soc., 1914, iv, By Surg., Gynec. & Obst. 382.

Wahrer states that Deaner advocates hysterotomy for (1) all cases of placenta prævia, (2) neglected cases of toxemia of pregnancy, (3) as a diagnostic measure to determine the question between soft myoma and pregnancy, (4) as a diagnostic measure in suspected carcinoma. He advocates hysterotomy as a routine method of abortion. He cites the dangers and uncertainty in the use of the curette and points out that sterility may be produced at the same time by division of the tubes.

EUGENE CARY.

Kunreuther, M.: Method of Performing Abortion and Sterilization at the Same Time in Pul-monary Tuberculosis (Über Methodik der Schwangerschaftsunterbrechung und gleichzeitiger Sterilisation bei Lungentuberkulose). Berl. klin. Wchnschr., 1914, li, 1628. By Surg., Gynec. & Obst.

There has been an increasing tendency of recent years to hold tuberculosis as a justifiable cause for artificial abortion. According to Heimann's statistics, 73 per cent of tuberculous patients get worse during pregnancy and 49 per cent of them die. Fellner-Schauta observed exacerbations in 68 per cent of the cases that had become stationary. Predella found that 95 per cent of 1,035 cases observed by him grew worse, and Essen-Möller found that 50 per cent, even under good sanitarium treatment, grew worse or died.

Kunreuther thinks it best to sterilize at the same time abortion is performed to avoid the danger of future pregnancies; tuberculous patients are particularly fertile. Of course this procedure should be limited to women who have already had children, and those in whom the tuberculosis is manifestly being made worse by the pregnancy. The best method is abdominal supravaginal high amputation of the uterus, leaving the adnexa. The hysterectomy prevents the menstrual loss of blood and prevents further conception while the presence of the ovaries prevents premature menopause. He has performed the operation twelve times without a death. He has had an opportunity to examine only four of the patients as much as two years after the operation, but they had gained in health and weight and the tuberculosis had become stationary.

He calls attention to the bad prognosis for children

born of tuberculous mothers. One of his patients had had six children, three of whom had died of pulmonary tuberculosis and the other three were infected.

Freund, H.: Pregnancy Complicated by Tuberculosis and Heart-Disease (Schwangeren mit Tuberkulose und mit Herzstorungen). Gynäk. Rundschau, 1914, viii, 313. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In contrast with most of the opinions expressed at the Munich Congress, the author thinks much can be accomplished by the combined work of int rnists and gynecologists in passing judgment on cases of pregnancy complicated by tuberculosis and heart disease. The internist should give the gynecologist detailed information in regard to the local findings, but should not decide the question of whether abortion should be performed or not, as the obstetrician often has greater experience in this particular. In hospitals, and especially in college hospitals, consultations between internists and gynecologists are indispensable, even in the clearest cases of pregnancy and tuberculosis, in order to work against a tendency to perform abortion on too slight grounds. In contrast with the prevailing idea that heart-disease is comparatively without danger during pregnancy, the author believes this complication to be one of the most grave; for in pregnancy and during the puerperium exacerbations of an old endocarditis are much more frequent than is generally known. He gives two detailed histories of cases that support his opinion.

Decio, C.: Some Thromboses During Pregnancy (Di alcune trombosi nelle donne gestanti). Ann. di ostet. e ginec, 1914, i, 338.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Eight case histories are given. All of the eight women were near the end of pregnancy; they had all been thoroughly well and were suddenly attacked without any perceptible cause with pains in the lower extremities and swelling of the legs. In some there were ectasias of the skin veins, in others there was a hard, painful cord in the region of the saphenous vein. In only three was there rise of temperature. Ordinarily the popliteal was affected.

During pregnancy thromboses often appear that cannot be regarded as infectious thromboses, because the presence of pathogenic bacteria in the veins can be excluded, and because the further course of the disease argues against it. In the causation of such thromboses special importance is to be attached to mechanical and biological factors, such as the slowing of the circulation in the veins of the lower extremities, aseptic injuries of the vessel walls, and especially changes in the bloodpressure. These conditions are to be regarded as manifestations of the manifold toxæmia of pregnancy. We are therefore justified in giving them the name of thromboses of pregnancy. The course

of the pregnancy is generally not interrupted; the thromboses disappear without any harmful consequences. In some cases, probably as the result of the penetration of bacteria into the circulation during labor, there is secondary infection of the thromboses. This prevents local recovery and the woman is subjected to the danger of septic emboli and a spreading of the infection. The treatment consists in the use of hot compresses. MESTRON.

Landau, L.: Myoma and Pregnancy (Myom und Schwangerschaft). Berl. klin. Wchnschr., 1914, li, 1445. By Surg., Gynec. & Obst.

Landau divides the cases of myoma complicated by pregnancy into four classes: (1) The myoma which gives no symptoms and is often only found accidentally on examination during pregnancy or labor. No treatment is necessary. This is the most numerous class. (2) The myoma which causes symptoms that make it necessary to operate. This type can generally be enucleated without interfering with the pregnancy. Landau has performed this operation and abortion was brought about in only one case. Several of the women have borne other children since. (3) The myoma which causes no general symptoms, but its size and location make natural delivery impossible or extremely dangerous for mother and child. In these cases it is best to wait for the end of pregnancy and perform cæsarean section. (4) In the fourth class the objective and subjective symptoms are such that the patient's life is threatened. Many advise abortion in such cases, but this subjects the patient to the danger of a later pregnancy. In such cases the author performs total or supravaginal hysterectomy of the pregnant uterus. He has performed the operation successfully 31 times.

The author points out that so many cases of pregnancy show a normal course when complicated by myoma that it is not necessary for a woman to refrain from marriage or child-bearing because she has a myoma.

ner: Acute Appendicitis and Pregnancy (Akute Appendicitis und Gravidität). München. Wanner: med. Wchnschr., 1914, lxi, 1391.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author points out the rarity of this disease during pregnancy and its dangers. On account of the displacement of the cæcum upward and outward during pregnancy there is greater danger of general peritonitis and of infection of the uterine contents and sepsis through the blood and lymph tracts and also through the mucous membrane of the tubes. Five cases occurring in the first half of pregnancy were operated upon by the author within a relatively short time. In one case there was abortion on the day after the operation; in the others the pregnancy was not interfered with. The incision for appendectomy during pregnancy should be made somewhat further upward and outward than usual, and the middle of the incision should lie over the

point of painful resistance. In a case which had previously been operated on in the seventh month of pregnancy the author found the cæcum and appendix pushed high up under the liver. Drainage should be avoided as far as possible if there are no abscess cavities denuded of peritoneum.

KELLER.

Turbeville, J. S.: Hookworm Disease and Pregnancy—the Dangers. South. M. J., 1914, vii, 862. By Surg., Gynec. & Obst.

The author states that Stiles, De See, and Williams claim that abortion is likely to occur in hookworm disease and quote a percentage of from 24 to 26.

The author's experience has taught him not to fear abortion in hookworm patients. However, he finds the predisposition to eclampsia is in-

Relatively the cedemata of pregnant hookworm patients are more common, and are quickly relieved by the eradication of the parasites. Williams puts the proportion of eclamptics in general obstetrical practice as 1 to 500; Turbeville has had 7 cases to every 300 for a period of twelve years.

The offspring have, as a rule, always been healthy and showed good development, except in extreme cases of hookworm disease. EUGENE CARY.

#### LABOR AND ITS COMPLICATIONS

Jarrett, E.: Cervical and Other Tears. N. Am. J. Homæop., 1914, xxix, 720.

By Surg., Gynec. & Obst.

In patients who are likely to have tears, two, three or four sutures are placed in the perineum before the head is born. Two fingers of the left hand are inserted into the vagina and three chromegut or silkworm sutures are inserted at equal distances, beginning at a variable distance from the They are placed according to the thinning of the perineum, from one-half to one inch to the side of the median line of the perineal body. They are passed into the vagina and out again on the other side. They are not tied, but clamped and left hanging.

This maneuver saves time and is a great aid to healing. The stitches seem to prevent or limit tears. The tears that occurred have all been median line tears; none of the lateral, jagged vaginal tears have been observed. After delivery the stitches are tied and the parts immediately approximated.

The author advocates the repairing of all cervical tears at the time of labor. EDWARD L. CORNELL.

Danforth, L. L.: Uterine Inertia. N. Am. J. Homwop., 1914, xxix, 653.

By Surg., Gynec. & Obst.

Danforth first considers the physiological influences that initiate uterine contractions. He cites some of the old theories and mentions researches made during the last two or three years by German

physiologists which tend to show that the onset of labor and its regulation depends upon unknown substances circulating in the mother's blood. Physiological experiments tend to show that metabolic processes within the fœtal body are capable of developing substances which produce a sort of systemic intoxication in the mother's blood that seems to be specific in producing uterine contractions. Von der Heide is certain that fœtal serum is capable of inducing labor and that the action is one of anaphylaxis. The pituitary gland seems also to play an important part in the production of labor and increases in size, weight, and color during pregnancy. Its action is very slight on the early pregnant uterus, but its intensity increases with the nearness of the term.

Inertia uteri may be primary or secondary. In the former, uterine action may be feeble from the beginning, due to a defect in the muscle or to innervation; this condition is seen in women of the poorer classes who have borne a large family rapidly. In the latter condition the uterine action may begin favorably but grow feeble after a time. Most marked cases are due to fatigue from disproportion.

The dangers that arise from this form are more serious when inertia occurs in the second stage of labor, although inertia in the first stage is not without some danger. An increasing mortality and morbidity is also noted in later childhood, due to

prolonged uterine inertia.

Treatment of uterine inertia is exceedingly broad and embraces the widest knowledge of the physiology and phenomena of labor. Interference with labor is not indicated unless objective signs of danger to the mother or child are apparent. If inertia is primary, the cause should be sought. If mechanical, as in an overdistended uterus from an excess of liquor amnii or from twins, labor may be started by draining away the fluids; malpositions of the fœtus should be corrected, and a pendulous abdomen supported by a well-fitting binder.

If engagement of the fœtal head, due to disproportion, causes inertia, the author advocates cæsarean section. If due to a resisting cervix, he advocates the use of the elastic bag. If the pelvic floor resists progress, he advises the use of forceps.

Pituitary extract should have no place in normal labor. Danforth believes it should be used tentatively to bring the presenting part within easy range of a simple forceps operation.

Eugene Cary.

Goldwasser, J.: Injuries to the Eye During Delivery, Especially in Forceps Delivery, and Their Medicolegal Significance (Über die Augenverletzungen bei der Geburt und besonders bei der Zangenoperation, und ihre gerichtlich-medizinische Bedeutung). Beitr. z. Geburtsh. u. Gynäk, 1914, xix, 365.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In connection with two cases at the Münich Gynecological Clinic the author discusses injuries to the eye during delivery. In the first case mentioned "the eye was found by the midwife in the placenta after the physician had left." In passing medicolegal judgment it must be remembered that eye injuries of the severest sort have been observed in spontaneous deliveries. Incorrect application of forceps or unskillful handling are hard to prove, and it must be remembered also that even with correct indications and technique injuries to the eye are sometimes unavoidable.

Kuster.

Polak, J. O.: Twilight Sleep. Long Island M. J., 1914, viii, 455. By Surg., Gynec. & Obst.

As statistics show that it is possible to produce analgesia and amnesia in 90 per cent of the cases in which "twilight sleep" is induced, Polak believes a woman is entitled to the relief of pain during labor if it is possible without undue risk to mother or child. In using scopolamine-narcophin anæsthesia the cervix dilates more easily and rapidly, as there is no pain from its stretching; hence the first stage of labor is shortened. The second stage may be prolonged and the patient should be watched closely. The danger from scopolamine-narcophin anæsthesia is due chiefly to an overdose of morphine. By using the minimum amounts required to produce sleep, by the individualization of the patient, and by the free use of water throughout the sleep, the danger can be very largely prevented.

The child is usually slightly narcotized and does not cry for two or three minutes after birth, but there is no cyanosis unless too much morphine has been used or the second stage has been unduly prolonged.

The sleep is particularly indicated in the nervous type of physically unfit, as it allows full dilatation of the cervix without much shock or fatigue. Dry labors and borderline pelvic contraction are indica-

tions for the use of "twilight sleep."

The patient should be definitely in labor when the first injection is given. She should be watched carefully, the condition of pupils, the pulse, the respiration, and the character of the uterine contraction being noted. Vaginal examinations are avoided. The fœtal heart rate is recorded every half hour. Arrhythmia or slowing of the heart is a bad sign.

Fifty-one cases were carried through successfully with entire amnesia and no feetal mortality.

D. H. BOYD.

Heller, J.: A Study of One Hundred and Fifty Cases of Twilight Sleep. Med. Rec., 1914, lxxxvi, 797. By Surg., Gynec. & Obst.

The author's conclusions are based on the records of 150 cases, private and charity, delivered in the Jewish Maternity Hospital. No case was excluded except for one of the following reasons: (1) A marked disproportion between the feetal head and the pelvis, necessitating a major obstetric operation. (2) Placenta prævia. (3) Absent or doubtful feetal heart sounds. (4) The woman too far along in labor.

Of the 150 cases 113 were primiparæ, 37 multiparæ. Delivery was spontaneous in 131 instances. Forceps were used 18 times. The remaining delivery was a breech extraction. Fifteen of the forceps operations were of the low variety. They were actually indicated in only 6 cases. In the other instances forceps were used for the convenience of the accoucheur.

The third stage was uneventful, the average duration being 20 minutes. In no case was the placenta retained more than 30 minutes. No abnor-

mal bleeding was observed.

The author is unable to state, with certainty, the effect of "twilight sleep" on the duration of labor. However, he feels that the first stage is somewhat shortened, while the second is positively prolonged.

The usually reported effects of the drugs on the mother were noted. Amnesia was not observed until after the third injection of scopolamine. Restlessness was rather frequently noted during the early part of the work. Added experience with the procedure has enabled the author to eliminate

much of this in his more recent cases.

The fœtal heart-beat never went above 160 nor fell below 120. In only one case was there any great difficulty in resuscitating the child. Because of the mother's restlessness before delivery she received three injections of morphine-narcotine meconate. The cry was delayed five minutes in 20 cases. All of the remaining children cried immediately and spontaneously. There were no stillbirths. Three of the children died a short time after birth. The death of two of these cannot be attributed to the narcotic. One was premature, with a spina bifida, and died three hours after birth. The other died of melena neonatorum on the third day. The cause of death in the third case was not definitely determined. If it be attributed to twilight sleep, the infant mortality would be 0.6 per cent, which is lower than ordinary.

The technique employed was the same as that used in the Freiburg Clinic. Morphine-narcotine meconate was repeated in only a few instances, owing to the extreme restlessness of the mothers.

The greatest number of injections of scopolamine given to one patient was 19, the average was five.

Pituitrin was used rather frequently.

The results are as follows: In 122 cases, or 81.3 per cent, amnesia and analgesia were obtained; in 13, or 8.7 per cent, analgesia without amnesia occurred. This result, i.e., analgesia without amnesia, the author claims, is ideal, as it allows the patient to use her abdominal muscles during the second stage. In 15 cases, or 10 per cent, failure resulted. Two cases of nephritis and two of chronic endocarditis are included in the series. A. C. Beck.

# Knipe, W. H. W.: The Freiburg Method of Dammerschlaf. Am. J. Obst., N. Y., 1914, lxx, 884. By Surg., Gynec. & Obst.

An extensive review is given of the use of scopolamine and morphine in obstetrics from its first use by Steinbuchel until its modified use by Gauss. The technique as used at Freiburg is described, and statistics of various writers, who have followed more or less closely the methods of Gauss, are quoted. He shows that the adverse reports were in every case from clinics where the method of Gauss was not followed. Gauss maintains that the unfavorable results were due to the lack of the control of the drug by memory tests, and points to the large percentage of painlessness as an example of overdosing.

The method of Siegel, which is an attempt to simplify the technique so that it can be more generally used, is also given. Attention is called to the fact that the method of Siegel does not give nearly as good results as does the individualizing method of

Gauss.

The author has tried all of the forms of opium which have been used in twilight sleep and states that the solution of morphine-muriate gives the best results. It is important to use a stable solution of scopolamine. Most watery solutions decompose quickly, forming a by-product, apoatropine, which is toxic, and, according to Gauss, has produced most of the bad results quoted by Hocheisen and others. Kessel has reported that on adding a drop of a thin permanganate of potash solution to the solution of scopolamine, if there is any of the apo-atropine present, it shows itself by the production of a brownish-yellow color; this test is very delicate. Prof. Straub of Freiburg prevents the decomposition of the scopolamine by adding 10 per cent of sexatomic alcohol mannite to the solution.

Knipe has employed twilight sleep in 41 cases, with the following results: 85 per cent of the babies cried lustily as soon as born, without any stimulation; oligopnœa was observed in 7 per cent; all lived. In addition there were 3 cases in which the umbilical cord was tightly wound twice around the neck, with one oligopnœa, one apnœa, and one stillbirth. In the mother complete amnesia was secured in 32 cases, or 78 per cent; partial amnesia in 4 cases, 10 per cent; analgesia without amnesia in 1 case, 2 per cent; failures in 4 cases, 10 per cent.

C. H. Davis.

Wichmann, S. E.: The Use of Metreurysis in Obstetrics; a Preliminary Report on a Modification of the Champetier and Ribes Bags (Über die Anwendung der Metreuryse in der Geburtshilfe; zugleich eine vorläufige Mitteilung über eine Modifikation des Champetierschen und Ribesschen Ballons). Duodecim, Helsinski, 1914, xxx, 263.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author criticises the defects of the Champetier bag and describes in this connection a case in the obstetrical clinic at Helsingfors where he lost a mature child in a case of partial placenta prævia through a complication due to the defects of the bag. As a result of this case he constructed a new metreurynter. The modification consists, in the first place, of replacing the base of the bag, which is a

segment of a sphere about 3 cm. high, by a flat base, or if it is technically possible and corresponds to practical needs, a slightly concave one. In the second place the transition from the shaft to the bag in the old Champetier bag has a periphery of about 10 cm. and a distance from the base of the bag of about 12 cm.; that in the new bag has the same periphery but a distance from the plane of the base of only about 6 cm. This causes the presenting part, with a dilatation of the os of, for example, 1 to 2 fingers' breadths, to be pushed upward not 15 cm. but only about 6 cm. In the third place the connection of the tube with the cock is not accomplished by copper wires, but by a ring-shaped clamp, and it is fastened to the same ring to which the extension weights can be conveniently applied.

Björkenheim.

Zarate, E.: Different Techniques for Hebosteotomy (Les différentes techniques d'hébostéotomie). Rev. mens. de gynéc, d'obst. et de pédiat., Par., 1914, ix, 301.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

After discussing the different methods the author describes his method of hebosteotomy, which he has used successfully for 6 years and which is quite similar to Bumm's technique. His own needle has a greater radius to the curvature, and the holder is perpendicular to the axis of the needle, so that adaptation to the bone is easier. The needle is introduced on the left side I cm. from the spine of the pubis and directed obliquely downward. In the meantime the index and middle fingers of the left hand make prophylactic lateral movements in the vagina to protect the soft parts. The exit of the needle at the outer edge of the labium majus is at the point of junction of the ascending ramus of the ischium and the descending ramus of the pubis. Delivery generally takes place spontaneously within the next hour, generally after an injection of hypophysin. During the first two days a catheter is kept in the bladder, and a compression bandage applied to the pelvis. The patient is able to get up after 18 to 20 days.

#### PUERPERIUM AND ITS COMPLICATIONS

King, J. E.: Past and Present Views upon the Treatment of Puerperal Sepsis. Interst. M. J., 1914, xxi, 1310. By Surg., Gynec. & Obst.

In discussing the former treatment of puerperal infection the author mentions the use of phlebotomy. At the onset from 20 to 30 ounces of blood were withdrawn. This was repeated one or more times. In some cases 60 to 80 ounces were taken within 3 or 4 days. Purging also was a favorite practice. Calomel, castor oil, Epsom salts, and jalap were used in large doses. From one-half to one ounce of calomel frequently was given within three or four days.

After 1850, as a result of the teaching of Holmes and Semmelweis, crude efforts at prophylaxis were

introduced. Prophylaxis, however, met with little favor until Pasteur and others placed the germ theory on a firm foundation.

Following the demonstration of the streptococcus in the infected endometrium the curette was employed as a means of removing the infection. For a time routine curettage was a common practice. After Bumm demonstrated Nature's attempt to limit further invasion by an infiltration of round cells, the use of the curette passed into disrepute. At the present time curettage is resorted to only in those cases which show evidence of the retention of clots or secundines. The blunt curette and, when possible, the finger have supplanted the sharp instrument of former times.

The author considers the use of intra-uterine douches of antiseptics and germicides of no value. Some physicians think they are distinctly harmful.

In colon infections of the chronic type autogenous vaccine has in a number of the author's cases been of distinct benefit. In other cases vaccines have proved valueless.

Operative treatment has been followed by discouraging results except in thrombophlebitis. Ligation of the pelvic veins has been followed by good results in a number of cases reported.

In summarizing the author states that the greatest advances have been made along the line of prophylaxis. He believes that, except in rare instances, all cases are due to carelessness or ignorance. In this connection he calls attention to the midwife evil, concluding with the statement that the midwife is neither necessary nor useful and that her existence in this enlightened age is a crime.

A. C. Beck.

James, J. E., Jr.: Clinical Suggestions Concerning Puerperal Septic States. Hahneman. Month., 1914, xlix, 809. By Surg., Gynec. & Obst.

The author believes that fever in the puerperium bespeaks sepsis; but he modifies this statement with a few exceptions, as the elevation of temperature during the first 24 hours after birth in protracted, difficult labor, or after intra-uterine manipulations or excessive hæmorrhage. Also a slight rise in temperature may occur at the time the breasts fill with milk, in neurotic women especially.

When infection in the generative tract is discovered it may either have been brought there from the outside or have been present in the form of a latent gonorrheal infection. The author thinks that the usual inert vaginal flora may cause sepsis in the presence of many lacerations. This he terms "auto-infection."

James emphasizes the fact that all local infections of the lower birth-canal give the same clinical picture, and therefore the condition must not neces-

sarily be judged an intra-uterine infection. He has very often found a pseudodiphtheretic infection about the cervix. For this condition he uses vaginal douches and the iodine application through

a speculum.

If the condition is found to be intra-uterine, as necrotic material having been retained, digital curettage should be insisted upon and intra-uterine

irrigations should be infrequent.

In cases where general sepsis develops the author believes in a most generous diet, free catharsis, and free kidney and skin activity. Alcohol, internally used, seems most beneficial. Vaccine therapy is favorably thought of, and antistreptococcus serum may be useful.

Eugene Cary.

Rouvier, J.: Treatment of Puerperal Eclampsia by Morphine and Its Adjuvants (Nouvelles remarques cliniques sur le traitement de l'éclampsie puerpérale par la morphine et ses adjuvants). Bull. Soc. d'obst. et de gynéc., Par., 1914, iii, 417. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The treatment of eclampsia during the puerperium must be directed chiefly against the attacks. Milk diet is much to be preferred to infusion of water, and should be followed by salt-free vegetarian diet. In morphine treatment large doses should be given; 14 cg. or even more can be given in 26 hours.

Immediately on the patient's admission the author gives 2 cg. and after half an hour another cg., after another half hour 0.25 cg.; then if the attacks stop and do not return for two hours he injects another 0.5 cg.; if the attacks do not stop then I cg. is given every hour; also, if the attacks stop for a while and then begin again 1 cg. is given every hour. Besides stopping the attacks the morphine has a salutary effect on the kidney secretion, preventing overfilling of the kidneys with blood and decreasing the albumin excretion. In order to prevent accumulation of toxins in the gastro-intestinal canal it is well to give stomach irrigations of 5 to 6 liters of sterile water, which must be repeated once or twice within a few hours; later, only when bilious vomiting occurs. Moreover, the intestine should be irrigated with 6 liters of sterile water, repeated every 6 to 8 hours. This is continued for 24 hours, till all fœtid masses have been removed from the intestine. To support kidney function 3 to 4 gm. of helmitol per day is given. Prolonged oxygen inhalation is advised to guard against cedema of the lungs. Because of the prognostic importance of cedema of the brain and meninges lumbar puncture should be performed; if there is blood in the fluid it is a very bad sign.

In post-eclamptic amnesia and mania he prefers morphine to any other sedative. Moreover, he believes that post-eclamptic mania is less frequently observed under morphine treatment than was formerly the case after bleeding.

Frankenstein.

Spire, A.: A Case of Spontaneous Inversion of the Puerperal Uterus (Un cas d'inversion utérine puerpérale spontanée). Rev. mens. de gynéc., d'obst. et de pédiat., Par., 1914, ix, 321.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The patient, a 20-year-old primipara, had very poor pains which, being without effect, made de-

livery by forceps necessary. Severe coughing during the third stage, before the placenta was separated, caused the uterus to become completely inverted. The placenta was separated and the patient fainted. Reinversion was effected without anæsthesia. The patient soon recovered. Secale was given and there was a prophylactic administration of antistreptococcus serum. The puerperium was slightly febrile.

Seifert, M. J.: Latent Atypical Malaria Complicating the Puerperium. J. Am. M. Ass., 1914, lxiii, 2215. By Surg., Gynec. & Obst.

The author reports a case of malaria complicating pregnancy. The patient, aged 25, during girlhood had anæmia accompanied by fainting spells and

dropsy.

On the sixth day after the birth of her first child she had chills and fever. Delivery had been attended with perineal and cervical lacerations. The illness lasted three weeks, but recovery was gradual on tonic and supportive treatment. Good health continued until the birth of the second child five years later.

Birth was again attended with perineal and cervical lacerations and moderate hæmorrhage, and six days later the left breast became indurated and painful, accompanied by chill and fever to 102.6°, pulse 104. The following day the pulse increased to 140 and the temperature arose to 104.2°,

subsiding to normal in the evening.

There were no evidences of pelvic infection which excluded puerperal septicæmia, and the symptoms were attributed to the breast condition. The urine showed specific gravity 1,032, albumin 4 per cent (volumetric), sugar a trace, hyaline and granular casts. On the third day the puse was 130, temperature 104°; the fourth day, pulse 130, temperature 105.2°; fifth day pulse 140, temperature 106.8°. The pulse continued above 110 and the temperature above 101°; no periodicity. Blood examination disclosed numerous malarial parasites of the tertian variety. Antimalarial treatment was effective in 24 hours. Recovery was gradual. On the subsidence of all symptoms lochial discharge reappeared, which, on microscopic examination, showed gonococci.

The author makes a plea for exhaustive methods of diagnosis as a routine practice, taking nothing for granted. He urges that all unusual cases be examinied exhaustively, clinical data and labo-

ratory findings being carefully studied.

H. G. HAMER.

Batisti, C.: Mental Diseases in Relation to the Puerperium (Le malattie mentali in rapporto al puerperio). Note e riv. di psichiat., 1913, xlii, 378. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The conception "puerperal psychosis" can be admitted today only to the extent that the puerperium is the starting point of a series of ordinary, well-known psychic diseases. The puerperium is

a particularly favorable predisposing factor in psychic disturbances, for aside from neuropsychopathic heredity there are toxic infectious processes, exhaustion, and other factors that profoundly affect the psyche. For the term "puerperal psychosis" there should be substituted the more accurate ones of amentia, maniacal depressive phrenosis, and dementia præcox, which are the mental conditions most often appearing during the puerperium, and for which the puerperium is only the predisposing cause.

GATTORNO.

Santi, E.: The Value of Fixation Abscess in the Treatment of Puerperal Infection (Über den Wert der Fixations-abscesse in der Behandlung der Puerperalinfektionen). Ztschr. f. Geburtsh. u. Gynäk., 1014, lxxvi, 102.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author reports 12 additional cases of puerperal sepsis treated by the formation of a fixation abscess, all but two of which were cured. He recommends not only one injection, as in his previous works, but repeated injections of turpentine oil under the skin of the abdomen; he no longer limits the injections to 1 ccm. but gives as much as 5 ccm. He especially recommends that this remedy be used The course of the disease generally runs parallel with the reaction against the turpentine injection. In the severe cases the first injection is followed by only a moderate reaction — the disease is only slightly influenced — but always enough so that early death is prevented and the course of the disease prolonged. On the second injection the reaction is greater and is accompanied by a slight improvement; on the third and fourth injections the reaction is better and more pronounced. There are no contra-indications to the remedy. In no case was the disease made worse by the treatment.

EISENREICH.

#### MISCELLANEOUS

Falls, F. H., and Bartlett, F. K.: Placental Proteins in Skin Reactions. Am. J. Obst., N. Y., 1914, lxx, 910. By Surg., Gynec. & Obst.

The authors review the work which has been done along this line during the past few years, and after describing in detail the points observed during their experiments, the preparation of their materials, the technique followed, and their results, draw the

following conclusions:

Proteins prepared from the placenta in this way or whole placenta, when introduced by the Von Pirquet intracutaneous or subcutaneous method, cause in most cases a local reaction in pregnant and non-pregnant individuals. The difference in the reaction, however, is neither great nor constant enough to be of value in the diagnosis of pregnancy. This speaks against the theory that the pregnant woman is specifically sensitized to placental proteins. The lack of a general anaphylactic reaction also opposes the view that the pregnant woman is in fact a sensitized woman.

The method of preparation of the proteins is open to the objection that the manipulations may have so changed the substrate that the specific ferments could no longer attack it and break it down. While this may be true, other proteins capable of sensitizing and producing anaphylactic shock can be handled in a similar manner and retain their specificity, as shown by Vaughn, Wells, and others.

C. H. Davis.

Edelberg, H.: Röntgen Rays and Pregnancy (Röntgenstrahlen und Schwangerschaft). Berl. klin. Wchnschr., 1914, li, 1262.

By Surg., Gynec. & Obst.

Experiments have shown that exposure of rabbits and guinea pigs to röntgen rays produces temporary sterility, and that if the animals are pregnant abortion is apt to be produced. There have been no reports on similar experiments in human beings.

Edelberg reports the case of a woman who was being given röntgen treatment for myoma of the uterus. She became pregnant about the middle of June and röntgen treatment was continued until the third of July. During this time 35 X Kienböck was given. Pregnancy and labor were normal and the child, now in its seventh week, is normal and in good health.

A. Goss.

Pardi, U.: Internal Secretory Function of the Ovary During Pregnancy (Sulla funzione endocrina dell'ovaio durante la gravidanza). Sperimentale, 1914, lxviii, 183.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author performed the following series of operations upon many pregnant rabbits on the sixteenth to twentieth days of pregnancy: thermocautery of all the corpora lutea of both ovaries, bilateral oöphorectomy, unilateral oöphorectomy followed by removal of the other ovary during a later pregnancy, transplantation of an ovary and removal of the other during a later pregnancy, ligation and resection of both tubes, superficial thermocautery of both ovaries, extraperitoneal displacement of an ovary (this was done in virgin animals also) and removal of the other during a later pregnancy.

From his experiments Pardi comes to the following conclusions: In rabbits, up to about the twentieth day of pregnancy the ovary is necessary to the continuance of the pregnancy; this function of the ovary is not due to the corpus luteum, for its activity ceases at about the sixteenth day of pregnancy; the tissue of the ovary also has an important functional significance in the physiology of pregnancy; probably it is not the follicle apparatus, but the interstitial ovarian gland that is the source of this function.

Sippel: Osteomalacia (Osteomalacie). Zischr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 254.
By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A woman of 39 had always been well up to her twenty-sixth year, when a tumor suddenly ap-

peared on her lower jaw, which on account of its rapid growth made complete excision necessary. It was found to be a sarcoma. Soon afterwards small painful tumors appeared in both hips, but were concealed on account of fear of operation. Two years later the patient married and soon became pregnant, and during the pregnancy a severe osteomalacia developed. The child was carried to full term, was delivered by forceps, was strong, and has developed well. After the delivery the symptoms did not subside, but, as in the last months of pregnancy, there were repeated spontaneous fractures of bones, and gradually large bone tumors developed in the upper part of both femurs and the right ilium. For five years the pain, which was almost unendurable, stopped, and the condition became stationary. The patient again became pregnant, and in the fourth month came to the hospital for artificial abortion. The severe osteomalacic changes shown by projection pictures are described in detail.

The peculiarity of the case lies in the large cystic bone tumors in the region of the pelvis and both femurs, which became as large as a child's head. The masses, which when examined were as hard as bone, must formerly have been soft, as was indicated by their flattened posterior surfaces. Both hip and knee-joints became almost completely ankylosed. The author thinks the tumors were benign cysts on account of their slow development, although sarcoma is more usual in connection with osteomalacia and the history is very suspicious. Castration by röntgen irradiation is being considered.

Walcher, Jr.: Effect of Contracted Pelvis on the Form of the Skull During Pregnancy (In der Schwangerschaft konfigurierte Schädel bei engem Becken). Zentralbl. f. Gynäk., 1914, xxxviii, 798.
By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Just as the shape of the head of the newborn child may be affected by its position, so may the configuration of the skull of the fœtus be powerfully influenced during pregnancy. In primiparæ with contracted pelvis Walcher has observed comparatively frequently that the head entered the pelvis during pregnancy, developed further there and adapted its shape to that of the pelvis, so that after a short delivery the form of the head conformed to a certain degree to the form of the pelvis.

Torbett, J. R.: The Prenatal Care of Obstetrics. Canad. M. Ass. J., 1914, iv, 1086. By Surg., Gynec. & Obst.

The question of the hygiene of pregnancy and subsequent management of the labor and puerperium as carried on by the Pregnancy Clinic of the Boston Lying-In Hospital occupies the main part of the author's paper. He has very clearly described the workings of this clinic from its birth in 1881 to the present time, showing how, by careful

and thorough work, they have been able to build up a clinic that cares for 2,000 women, in their homes, every year.

homes, every year.

The work has been largely carried on by the students of Harvard Medical School in coöperation with the Instructive District Nursing Association, and later the Women's Municipal League. Naturally all the actual work connected with this department is under the direct supervision of the attending staff of the Boston Lying-In Hospital.

Patients from the out-patient department come directly to the pregnancy clinic, where a very careful history is taken, special attention being given to previous obstetrical history. A thorough general examination is made and accurate pelvic measurements are taken. The urine is examined and the blood-pressure recorded.

Having the foregoing data properly recorded, the patient is given directions as to the hygiene of pregnancy, with directions to return to the clinic in one month, or sooner, if any untoward symptoms appear. The patient's name is then given to a nurse, who makes any follow-up visits that may be necessary to the proper supervision of the case.

All patients are urged to come to the clinic as soon as they suspect pregnancy, but it is rare to have them report earlier than the fifth to the sixth months.

Should the patient's urine show albumin accompanied by a high blood-pressure and the symptoms be acute, she is sent into the hospital for treatment. If the symptoms are mild, she is instructed as to what to do and told to report back to the clinic in three, five, or seven days. If she does not return at the stated time, a nurse is detailed to look up the case and report her findings to the physician in charge. Usually these patients report back promptly and take an intense interest in the outcome of their cases.

Careful supervision of the entire pregnancy in such manner enables one to practice the art of obstetrics according to scientific principles. From the student's standpoint the training is ideal, for it enables him to acquire superior knowledge in the systematic handling of his maternity cases.

The cost of such a system, exclusive of the actual confinement and the services of the physician during pregnancy, has averaged, for 2,000 cases, \$1.16 per patient.

In conclusion, the author emphasizes the need of such an institution in every community and its inestimable value to every medical man who wishes to practice honest obstetrics.

HARVEY B. MATTHEWS.

Gordon, A.: An Unusual Form of Birth Palsy. J. Am. M. Ass., 1914, lxiii, 2282.

By Surg., Gynec. & Obst.

The paralysis occurred in the flexor carpi ulnaris and flexor carpi radialis muscles. The case was a breech presentation and forceps were applied in the mento-occipital position for the final delivery of the after-coming head. The paralysis was bilateral and symmetrical and confined to the flexors of the wrists exclusively. The child was able to elevate, abduct, adduct, rotate, pronate, and supinate the arms and forearms. The wrists remained extended in all these movements. The fingers were all flexed as in a normal condition.

In this case the two branches of the median and ulnar nerves supplying the flexor carpi ulnaris and flexor carpi radialis evidently became involved during the accoucheur's manipulation. The damage was done to those filaments of the seventh and eighth cervical roots which enter into the formation of the ulnar and median nerves, but which become separated from the main trunks at the level of the upper third of the forearm to enter the corresponding muscles.

EDWARD L. CORNELL.

Klebanski: Study of the Duration of Gonorrhœal Ophthalmia of the Newborn; Its Treatment with Silver Salts and Vaccine Therapy (Recherches sur la durée de l'ophtalmie gonococcique du nouveau-né et sur le traitement par les sels d'argent et la vaccinothérapie). Rev. prat. d'obst. et de pédiat., Par., 1914, xxvii, 97.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author bases the following conclusion on 116 cases: The duration of gonorrhœal ophthalmia of the newborn varies from 8 to 90 days, the average being 35 days. The earlier the child comes for treatment the shorter the duration of the disease; cases which come for treatment the first week are generally well within less than three weeks. The combined treatment with silver nitrate solution and ardysol 1:5 is more effective than that with silver nitrate alone; instead of 25 per cent injuries of the cornea there are only 16.5 per cent. Vaccine treatment has no effect on the course of gonorrhœal ophthalmia in the newborn.

McClanahan, H. M.: Management of Delicate and Premature Infants in the Home. J. Am. M. Ass., 1914, lxiii, 1758. By Surg., Gynec. & Obst.

The two general requirements in the care of premature infants are proper nourishment and the maintenance of body heat. In order to sustain life, body heat must be maintained, also a rapid dissipation of heat must be prevented. Heat is given off from the body by the excretions—the lungs and the skin. This heat loss can be greatly limited.

The author's experience with the modern incubator has not been satisfactory in a number of cases. The infants live a few days and then die, even when they are not losing weight. For this reason he has

resorted to the following method:

An ordinary clothes-basket, 24 inches long, is used. The bottom is padded so that the basket has a depth of 8 inches; it is lined with white oilcloth, and over this a layer of cotton batting is placed. This, in turn, is covered with white flannel, which is fastened over the top of the basket by safety pins, so that the upper portion can either be turned back or fall about the neck of the infant, leaving the body surrounded by an air-space.

Heat is maintained by means of hot-water bottles covered with flannel. A thermometer is kept in the basket and a temperature of from 90° to 95° maintained. At night it may be necessary to cover the basket with a rubber sheet in order to maintain the temperature. The infant's face is exposed, so that it breathes purer air than in the incubator.

The body of the baby is anointed with olive oil, wrapped in a layer of cotton batting loosely applied, and then in a soft flannel blanket. The infant can be fed in the basket without being removed. Absorbent cotton pads can be used for napkins, thus allowing the infant to remain in the basket except when the body is oiled.

As soon as the infant's weight increases, the temperature in the basket can be lowered, and in two or three weeks the hot-water bottles can be

dispensed with.

The proper food is breast milk diluted with an equal quantity of water. The infant is too weak to nurse and, therefore, should be fed. The strength of the food is rapidly increased. For the first three days food should be given every hour; after that the interval should be lengthened.

Among the dangers to be guarded against are regurgitation of food in the throat and suction into the larynx. Also excessive external heat will

produce a fever even as high as 105° F.

EDWARD L. CORNELL.

#### GENITO-URINARY SURGERY

#### KIDNEY AND URETER

Baldwin, J. F.: Adrenal Precocity; Precocious Development of the External Genitals Due to Hypernephroma of the Adrenal Cortex. J. Am. M. Ass., 1914, lxiii, 2286.

By Surg., Gynec. & Obst.

The author reports a case in a child of precocious appearance of hair on the face and pubes and external genitals in connection with a hyperne-

phroma of one adrenal body.

In an exhaustive article on this subject, with the report of one case, Jump, Beates, and Babcock have collected from the literature records of seventeen cases, their own case making the eighteenth. Of the eighteen cases reported, all patients died before they were 16 years old. Some were operated on and died shortly after. In others the growth was inoperable when the patient came under observation. In all the cases the conditions present were verified by a more or less complete necropsy.

One case, a boy aged 5 years and 10 months, appeared in height and weight about normal for his years. The facial expression, however, seemed to be that of a man of 35 or 40. He had been shaving for some time. The genital organs were apparently those of an adult, except that the testicles were small and not completely descended; the voice was that of an adult, but the mentality was that of a mere child. There was a large tumor in the abdomen. It was extensively adherent, and somewhat nodular. Considering the extensive condition of the tumor and the poor condition of the child, operation was not advised; the child died at the age of 6 years.

At autopsy the tumor was found lying between the layers of the mesentery of the descending colon. It weighed about 15 pounds with numerous small nodules protruding. The kidneys showed a chronic diffuse parenchymatous nephritis. The liver was full of metastatic nodules. THEO. DROZDOWITZ.

Spitzer, W. M.: Continuous Painless Renal Hæmorrhage and Its Treatment. J. Am. M. Ass., By Surg., Gynec. & Obst. 1914, lxiii, 2110.

After a detailed discussion of the etiology, pathology, and treatment of renal hæmaturia

without pain, Spitzer concludes:

1. The changes found in the kidney of essential hæmaturia are identical with those found in passive congestion and are therefore caused by passive

2. The bleeding is due to passive congestion, the kidney being an organ so constructed that it must of necessity bleed in the presence of passive congestion.

3. It is erroneous to ascribe the bleeding to nephritis, as there are no clinical symptoms or urinary findings indicative of nephritis, nor can the latter be unilateral. Still it is admitted that if the bleeding continues, the pathologic changes in the kidney will be the same as in chronic interstitial nephritis.

4. The passive congestion occurring in one kidney only is due to some interference with the outflow of the blood, which comes from a twisting of the

kidney on a short pedicle.

5. Operative interference is warranted only when it becomes necessary to save the patient's life because of an increasing secondary anæmia.

6. Bisection of the kidney for the cure of this condition is contra-indicated and likewise dangerous. IRVIN S. KOLL.

Thompson, G. S.: An Operation for Movable Kidney. Brit. M. J., 1914, ii, 1096. By Surg., Gynec. & Obst.

In this operation the essential desiderata are (1) a guarantee against recurrence of the undue mobility, and (2) an assurance that the fixation will be satisfactory, by restoring and maintaining the normal position of the organ.

The principle of this operation is the insertion of the kidney into, and its suspension by, a sling, and the fixation of the latter to the posterior abdominal

The sling consists of a net made from chromicized catgut, or preferably floss silk, the material at present varying according to the predilection of the surgeon, as time alone can show which is to be preferred. These slings are made in various sizes, so that there is no difficulty in adapting one to the requirements of the particular case. A gap is left at the hilum 2 in. long by 1 in. broad, so that the border of the net here falls well short of the vessels and duct; and thus no pressure can be exercised on these important structures. The convex border is left open to facilitate the insertion of the kidney into the sling, and at the ends of this opening two free ligatures are left open for the purpose of lacing up the gap, and then to sling the net to the abdominal wall. The complete sling is thus reniform with a permanent gap at the hilum and a temporary slit along the outer border, the size of the mesh being about 0.5 cm.

The kidney, having been exposed in the usual way, is inserted through the gap and by the help of the slit into the sling; it is then laced in, but loosely, and when this is completed the ligatures are knotted and thus fixed, the lower ligature ending above opposite the costal groove on the kidney. The lacing should be rather loose so that the sling fits the

kidney somewhat loosely, in order to allow for the expansion of the organ which is known to occur. It must not be loose enough, however, to permit the net to rotate and impinge by its free inner border on the structures of the hilum, thereby compressing them, and in order to obviate this it is as well to insert one or two fixation sutures so as to include the net and kidney and maintain the proper relative The kidney having been inpositions of both. vested, the next step is to fix it in position by the free ligatures along the outer border. One is passed external to the normal position of the kidney over the twelfth, or if necessary the eleventh, rib; the other through the muscles near the lower end of the viscus, and the two ends tied loosely under the skin; loosely, again, in order that the kidney may be free to move with respiration and adapt itself spontaneously to the exact position after the patient has been placed in bed with the foot blocked up. The remaining steps of the operation are as usual.

When the author first developed the above method in 1909, he used for the posterior base of the sling a reniform plate of thin sheet celluloid, riddled with punch holes, the remainder of the sling being as above and the netting attached to the border of the plate. When placed in the body this plate soon becomes fixed to the neighboring parts by infiltration, but Thompson thinks the elimination of the plate an improvement in technique and

has not mentioned or used it latterly.

The first patient operated on, in 1909, is still quite well and free from all her previous troublesome symptoms, while the organ still remains quite fixed. The wound healed by primary union, and the patient left the hospital at the end of three weeks.

Thompson believes that this operation is an improvement on any other method. It is sure, quick, rational, simple, as well as satisfactory from the patient's point of view, and he believes that its merits should cause it to supplant the other faulty and bad procedures which are in vogue at present.

H. A. MOORE.

Kretschmer, H. L., and Moody, A. M.: Malignant Papillary Cystadenoma of the Kidney with Metastases. Surg., Gynec. & Obst., 1914, xix, 766. By Surg., Gynec. & Obst.

This article is based upon the report of a case occurring in a boy aged seventeen, the report including both the clinical findings and the results of the autopsy. At the age of nine the boy had typhoid, during which he passed blood in the urine. The attack of hæmaturia, at the time of his coming under observation, had been present for one and one-half years. A large kidney tumor was present. The X-ray showed the presence of a shadow-producing body at the upper pole of the kidney. Six months after coming under observation the patient died.

The kidney was removed at autopsy. The upper pole contained a large, hard calcified mass the size of a fist. The retroperitoneal glands were involved.

The bodies of the vertebræ were eroded, due to the presence of the large tumor mass.

Histological examination demonstrated that the tumor was a typical papillary cystadenoma. The metastases showed the same histological structure as the primary tumor as well as large deposits of lime salts.

The authors were able to collect ten similar cases from the literature, in none of which was the tendency to calcium deposits present. One case was aged 27; all the others were over 40. Hæmaturia was present in all the cases. Three of the ten cases reported were discovered at autopsy.

Barnett, C. E.: Polycystic Kidney. Surg., Gynec. & Obst., 1914, xix, 753. By Surg., Gynec. & Obst.

Barnett refers to a former paper on this subject in which he endeavored to show that the available statistics were insufficient, especially in covering the question of unilateral polycystic kidney.

The article covers the statistics of the United States from a numerical, diagnostic, and prognostic standpoint. Barnett considers an absolute diferential diagnosis between unilateral and bilateral polycystic kidney as impossible, because of the astounding small amount of kidney substance that is required to sustain life; so unilateral is designated when the surgeon by palpation, functional tests, etc., has proved it so according to his best judgment.

The whole number of cases reported and considered authentic was 251; bilateral 150; unilateral 101; of this number, 9 unilateral cases are still living, 104 had operative recoveries, and 58 died.

The first choice in nomenclature was "polycystic kidney"; second choice, "congenital cystic kid-

ney."

Heredity was a factor in four cases; associated cystic disease was reported but four times. It occurred five-eighths times in the female to three-eighths in the male. The youngest case was five years of age; the oldest 76 years. The disease occurred most frequently at 41.5 years. There were 25 post-operative recoveries of unilateral cases and 9 of bilateral. Twenty-five years was the longest period of life for the unilateral cases and eleven years for the bilateral. Nine unilateral cases on which nephrectomy was done are still living, with 18 years as the longest time since the nephrectomy.

An anomalous case was reported with a single left kidney whose upper two-thirds was polycystic and lower third normal; the right ureter crossed over to the upper half of the kidney pelvis; a stone occupied the lower pelvis. Nephrectomy was performed because the lobe of liver was thought to be the right kidney. Barnett considers that the polycystic portion of this kidney had been acquired and the cystic condition above with normal tissue below would tend to disprove the claim that the disease always occurs bilaterally.

He draws the following conclusions:

The number of bilateral and unilateral polycystic kidneys is overwhelmingly greater than our present textbook statistics would indicate.

The question of infection has been one of recent years only; consequently, more time is necessary

in order to show its importance.

The known etiological factors are so few that it must necessarily be concluded, from the number of hypotheses given, that there are several causes for polycystic kidney disease.

Nephrectomy in unilateral cases, where the opposite kidney is proved competent, especially when the tumefied kidney has produced a ptosed viscera,

is undoubtedly indicated.

The years elapsing since nephrectomy was done in a number of cases reported led to the belief that a unilateral polycystic kidney condition did exist.

Stewart, G. D., and Barber, W. H.: Hydronephrosis. Ann. Surg., Phila., 1914, lx, 723.

By Surg., Gynec. & Obst.

In the course of a study of the causation of renal infection, paralysis of the ureter and dilatation of the kidney pelvis and calyces were so frequent as to suggest experimental observations on hydronephrosis.

Both of a dog's ureters were stripped and one was ligated at the ureterovesical junction. The animal lived five days in a drowsy, indolent state. Autopsy showed both kidneys to be hydronephrotic, the ligated ureter-kidney being twice the size of the non-

ligated ureter-kidney.

To determine if physiologic or adynamic ureteral obstruction gives rise to distended kidney, in nine dogs the ureter was removed from its bed and stripped completely and replaced in the abdominal cavity. In each case a cubical foreign body, infected with autogenous colon bacilli and other organisms and of such shape as not to cause valvular urethral obstruction, was placed in the bladder, so that a permanent purulent cystitis was produced. In three cases the ureter became stenosed and the obstruction appeared to be organized blood within the ureter. In the remaining six cases the ureter remained patent. Hydronephrosis was produced in five cases, pyonephrosis in one, parenchymatous degeneration in one, and interstitial nephritis in one.

To study the physiological effect of such traumatism upon the ureter a dog was etherized and the following observations made upon the ureteral movements: (1) Waves of ureteral peristalsis were noted at nine-second intervals. (2) Waves of ureteral peristalsis were noted at sixteen-second intervals with the middle ureter stripped. (3) Waves of ureteral peristalsis were noted at twenty-five-second intervals with the greater part of the ureter stripped. (4) The waves were not continuous. Fibrillary contractions were noted at sixty-nine-second intervals with the ureter completely stripped; while at the same time peristaltic

waves were observed at seven-second intervals in a normal ureter.

In another dog both the ureters were exposed, one being left intact and the other stripped. On rolling the normal ureter under the finger, contractions were elicited; but on rolling the stripped ureter under the finger no contractions could be aroused.

From this observation it would appear that a cause of urinary stasis in the above experiments was ureteral paralysis analogous to adynamic ileus, and it is offered tentatively as a cause of hydro-

nephrosis.

A clinical case, occurring in the practice of one of the authors, typified the hydronephrosis complex and emphasized the relationship existing between experimental and applied surgery. There were found at operation a large hydronephrotic kidney and a calculus wedged into the ureteropelvic isthmus.

Microscopic study showed that the kidney had undergone pressure atrophy from distention. Experimentally, a similar case was produced in a dog by a calculus accidentally slipped into the ureter at the junction of the lower and middle thirds. These cases correspond with the specimens produced by paralyzing the ureters.

The conclusions are:

r. It is generally agreed that mechanical obstruction gives rise to urinary stasis, and, when continued sufficiently long, to kidney distention.

- 2. This mechanical obstruction may be complete or incomplete, gradual or sudden. When the obstruction is sudden and complete, transitory hydronephrosis with marked congestion follows, atrophy intervenes and is proportionate to the duration of the obstruction.
- 3. Paralysis of the ureter is accompanied by urinary stasis and kidney distention in 66 per cent of cases.
- 4. The pathological changes in hydronephrosis of functional origin correspond to the age of the adynamic ureter.

  H. G. Hamer.

Wettstein, J. C. R.: Kidney Infections. Illinois M. J., 1914, xxvi, 590. By Surg., Gynec. & Obst.

Wettstein discusses pyelitis thoroughly, and reports a case of pyonephrosis after removal of infected adnexa in a young woman. Drainage of the pelvis was followed by recovery. This patient, as well as another, showed some bronzing of the skin, which the author thinks is traceable to the adjacent adrenal, which was somewhat involved in the inflammatory process. He further calls attention to the following facts as related to his own cases:

There are many cases of surgical kidney conditions without a single sign pointing to the kidney as the source of these symptoms.

2. There are many cases of obscure fever which have their origin in the kidney.

3. There are many cases of stone in the kidney or ureter, or both, which never have the symptoms known as renal colic; furthermore, there are many conditions besides kidney or ureteral stone which can cause typical renal colic.

4. Many cases of kidney disease, especially tuberculosis, cause more bladder than kidney symptoms.

5. The first sign of kidney disease, especially

tumor, is a severe hæmaturia.

In conclusion, Wettstein refers to several infections which may secondarily involve the kidney: (1) acute and chronic tonsillar infections; (2) infection in and about the appendix; and (3) gall-bladder infections.

J. S. Eisenstaedt.

## Kreissl, F.: Renal Tuberculosis; Its Diagnostic Difficulties and Surgical Problems. Kentucky M. J., 1914, xii, 751. By Surg., Gynec. & Obst.

The author reviews Israel's report of 1,023 cases of tuberculosis of the kidney subjected to nephrectomy. Of deaths occurring within six months of operation, 26 per cent were due to acute general miliary tuberculosis, 15 per cent to tuberculosis of respiratory organs, and 21 per cent to renal lesions.

Of deaths occurring six months after operation, 13 per cent were due to acute miliary tuberculosis, 43 per cent to tuberculosis of the respiratory organs

and 40 per cent to renal lesions.

Kreissl states that the classical symptoms of renal tuberculosis: namely, pain on the affected side; enlargement of the diseased kidney; albumin, pus, blood, and tubercle bacilli in the urine; fever; night sweats; and emaciation are never seen except in the late hopeless cases.

The early symptoms, when a diagnosis is of value, are hæmaturia, albuminuria, pyuria, polyuria,

pollakiuria, and vesicle tenesmus.

He emphasizes the value of ureteral catherization in the diagnosis of renal tuberculosis and he also recommends the biological test to find tubercle bacilli in the urine, and, lastly, he recommends that the cases in which catheterization of the ureters show a normal second kidney should be treated by removing the diseased kidney.

In the group of cases that show some involvement in the supposed normal kidney the question as to whether nephrectomy of the most diseased kidney should be done must be decided for each individual case and according to the experience of the surgeon. Some of these kidneys are not really diseased, but merely irritated by toxins and will clear up after the diseased kidney is removed. V. D. LESPINASSE.

## Fanz, J. I.: Phenolsulphonephthalein Renal Function Test. N. I. M. J., 1914, c, 1214. By Surg., Gynec. & Obst.

In order to save the expense of buying a good standard colorimeter for making phthalein tests, Fanz uses the following technique. He obtains a specimen of the patient's urine before injecting the dye and uses this specimen to make a standard by taking as much of it as is obtained in the first-hour output after injection and diluting up to 1000 ccm. He then alkalinizes with 25 ccm. of a 10 per

cent potassium hydroxide solution and adds I ccm. of the contents of an ampoule of phthalein. The first-hour output is similarly alkalinized and diluted up to 1000 ccm. In order to read its phthalein per cent 100 ccm. of the standard solution is diluted until its color matches that of the diluted first-hour specimen. Fanz found an error of only 2 to 4 per cent by this method. Frank Hinman.

#### Tracy, S. E.: The Phenolsulphonephthalein Test from the Viewpoint of the Abdominal Surgeon. Surg., Gynec. & Obst., 1914, xix, 734. By Surg., Gynec. & Obst.

Tracy employed the test in about 300 cases, and the material for his paper is based on the observations of the first one hundred cases, on which 120 tests were made. The total output represents the

his paper as follows:

1. The dye appeared in the urine in 5 to 42 minutes, the average being 10 minutes and 18 seconds.

percentage excreted in two hours. He summarized

2. The average output for the first hour was 34.27 per cent, for the second hour 20.83 per cent, and for the two hours 55.1 per cent.

3. In 20 per cent of the tests there was 4 per cent or less difference between the output in the

first and the second hour.

4. In the series five cases with the lowest phthalein output were subjected to major operations and had a normal convalescence.

5. Other cases with a much higher phthalein output had a complicated convalescence, with

evidence of renal disturbances.

Case 56, with a phthalein output of 53 per cent, died of uræmia in less than two months.

Case 59, with a phthalein output of 72 per cent, died of uræmia in less than one month.

Case 69, with a phthalein output of 55.5 per cent, died in the hospital of uramia 52 days after operation.

Case 98, with a phthalein output of 87.5 per cent, died in the hospital of uræmia 5 days after operation.

In determining the functional activity of each kidney the test should be applied several times and the average taken. The result should then be checked up by other tests.

The following are the author's conclusions:

It does not seem possible to work out the minimum percentage of phthalein output which will indicate the safe undertaking of surgical operation, nor is it possible from the phthalein test to determine what cases should or should not be subjected to operation. In the author's opinion, it will never be possible to determine this point by any laboratory test, as the functional activity of a kidney varies under different circumstances and at different times.

In determining whether or not a patient should be subjected to operation, the history, clinical symptoms, and physical examination are of much greater value than any renal functional test yet devised.

The phthalein test used in conjunction with the

clinical symptoms, history, and physical examination should put the surgeon on his guard and cause him to study the patient most carefully before undertaking an operation. The phthalein test should be used only as one of the many methods of investigation in ascertaining the condition of the patient.

Kahn, M., and Spielberg, W.: Condition of Nutrition in Nephrectomized Patients. Interst. M. By Surg., Gynec. & Obst. J., 1014, XXI, 1250.

The authors give a short history of experimental work done on the question of determining how much of the kidney substance can be removed and life

They report the work of Fleisher, Penzoldt, and Tuffier. Tuffier determined that the minimum be placed at 1.5 gm. of kidney per kilo of body-weight.

The authors have studied in detail the amount of nitrogen secreted and retained by two cases in which one kidney had been removed. conclusion is as follows:

From the examination of the analytical data, it must be concluded that the excretion of the various catabolic fractions in the urine is quite normal. In the case of the second patient, while the output of the different fractions was small, it must not be taken as evidence of disturbed metabolism. The patient felt quite well, and the small output is ascribed to a small intake. The experiments prove that the remaining kidney compensates adequately when the opposite kidney is removed.

A. C. STOKES.

Ingebrigtsen, R.: Kidney Transplantation (Homoplastisk nyretransplantation). Norsk. Mag. f. Lægevidensk., 1914, lxxv, 1143.

By Surg., Gynec. & Obst.

Ingebrigtsen states that some of his experiments on dogs and cats proved technically successful but still the transplanted kidney lost its vitality. He thinks that there is little hope of clinical transplantation of these organs on account of the individual differences between the donor and the recipient. Clinical transplantation will not be possible until means are discovered of estimating beforehand the serological and biological properties of each individual, and thus selecting those that are adapted to each other. A. Goss.

Geraghty, J. T.: The Treatment of Chronic Pyelitis. J. Am. M. Ass., 1914, lxiii, 2211.

By Surg., Gynec. & Obst.

According to the author, while most cases of pyelitis are secondary to an infection of the kidney parenchyma or part of a pyelonephritis, still, clinical experience and examination of pathologic material prove that a pure pyelitis can occur. The majority of non-tuberculous kidney infections are undoubtedly due to some predisposing factor, as stone, tumor, stricture, or other mechanical obstruction, and the amelioration or cure of the infection is dependent on the removal of the predisposing

The differentiation of simple pyelitis from pyelitis with parenchymal involvement is usually impossible without the employment of functional estimation. In pyelonephritis the function will be decreased, while in pure pyelitis no reduction in function will be observed. The presence or absence of albumin in the catheterized specimen has only occasionally been of diagnostic value in the author's The organism causing the affection has probably very little influence on the prognosis.

After determining accurately that the case is one of simple pyelitis a renal lavage is instituted. Of the many solutions employed the author has come to depend largely on silver nitrate and liquor formaldehyde. Vaccines and hexamethylenamine, at the kidney level, have proved of questionable value.

The types of cases are divided into the following

groups:

1. Those in which the catheterized specimen shows a fairly active infection with a normal function, and in which collargol shows very few changes in pelvic outline. The author begins with injections of 5 to 10 ccm. of a 0.5 per cent silver nitrate solution, the tip of the catheter being rather low down in the ureter, as there is usually a concomitant ureteritis. The strength of the injection is gradually increased until a 5 per cent solution is reached, the occurrence of a fairly good reaction being deemed essential for elimination of infection in the majority of cases. In this class of cases the results in the hands of the author have been very favorable.

2. In long-standing cases in which marked changes have taken place in the pelvic wall, as shown by pyelography, and in which very few leucocytes and only an occasional bacterium are found in the catheterized specimens, the prognosis is unfavorable. The infection in these cases is of low grade, and usually quite deep in the pelvic wall, so that eradication is difficult, and if after treatment the infection apparently disappears, it usually recurs. One should be guarded in giving a good prognosis

in this type of cases.

3. In infections of the kidney pelvis, associated with a certain amount of pelvic dilatation and varying amounts of residual urine, pelvic lavage has been of comparatively little value. For such cases, especially when the condition is one of bacteriuria largely, and nephrectomy is contra-indicated, pelvic lavage with 1:5000 formaldehyde has been most satisfactory. In cases associated with mild hydronephrosis the catheter should, needless to say, be pushed high up into the pelvis for thorough drainage before beginning lavage.

H. W. PLAGGEMEYER.

Beer, E.: Aspects of Renal and Ureteral Lithiasis. Interst. M. J., 1914, xxi, 1237

By Surg., Gynec. & Obst.

Beer cites a number of interesting observations, which demonstrate the following important points in connection with the diagnosis of nephrolithi-

1. Stones of large size can occupy a position in the kidney pelvis extending into the calyces without causing any focalizing subjective symptoms.

2. In the presence of a calculus in one kidney pain may exist in the opposite organ due to renorenal reflex from a diseased to a healthy organ.

3. In renal lithiasis pains may be so referred by the patient, that a disease of another organ is

diagnosed (appendicitis, etc.).

4. Calculi, which are left undisturbed in the kidney, grow very slowly, and it is important not to deliver the kidney in cases of bilateral extensive disease, thus saving for the patient useful and much needed kidney tissue.

5. Small stones not only wander from the kidney to the bladder but, occasionally, also from below toward the kidney, thus illustrating the importance of taking an X-ray picture just prior to

operation.

6. A cultural study of the separated urines before operation is important and useful as a guide to the operative procedure in nephrotomy; primary suture of the kidney can thus be done in the presence of sterile urine, while drainage must be resorted to in the presence of infected renal secretion.

M. KROTOSZNER.

#### Frank, L.: Some of the Causes of Ureteral Obstruction, with Special Reference to Differential Diagnosis. Interst. M. J., 1914, xxi, 1209. By Surg., Gynec. & Obst.

Frank enumerates as the most prolific causes of ureteral obstruction, some of which are not mentioned in previous literature, the following:

r. Calculi either occluding the reno-ureteral aperture or passing into the ureteral lumen. All ureteral calculi are renal in origin and the diagnosis is today almost always feasible by cystoscopy, ureteral catheterization, and radiography.

2. The so-called congenital valve occurring near the ureterorenal juncture. Such anomalous formations are exceedingly rare, and their definite determination is only possible at operation or necropsy.

3. Kinking with stenosis forms an inordinately elongated but otherwise normal ureter. Elongation may occur as an anatomic developmental departure from the normal, as the result of stretching due to the presence of a neoplasm, or through pulling from a prolapsed kidney. The latter condition may be diagnosed by pyelography.

4. Anomalous anatomic developmental conformation with obliteration of the ureteral lumen. This anomaly is generally complicated by other departures from the normal of the urogenital tract (horseshoe-kidney, fused kidney, supernumerary ureter, etc.) and is, in the majority of instances,

only discovered at necropsy.

5. Kinking with stenosis from displacement of the ureter by pressure of neoplasms including the gravid uterus.

6. Extension of inflammatory exudate and adhesions (post-operative or otherwise) from previous appendicitis, particularly the chronic so-called postcæcal type. The diagnosis of this type of ureteral obstruction is aided by pyelography and clinical investigation.

7. Angulation and displacement of the ureter from exaggerated visceroptosis. Ureteral occlusion is now known to be a common result of this affliction, occlusion occurring through angulation.

8. Extension of inflammation from infection of the uterus and its appendages, causing thickenings of the ureteral wall for a considerable distance.

- 9. The so-called pus-obstruction from pyelitis of tuberculous or other infective origin. obstruction may be overcome by ureteral catheter-
- 10. Ascending infection from cystitis, the result of neisserian or other pyogenic organisms. This type is obviously very rare and its diagnosis is feasible only through occlusion of other probable causes.
- 11. Intussusception from previous obstruction with dilatation of the proximal ureter. As a result of previous obstruction an enormous dilatation of the proximal portion of the ureter may occur which so completely enfolds its distal extremity that the lumen of the latter is entirely obliterated. The pre-operative diagnosis of this anomaly is rarely aided by radiography, and thus ordinarily is not feasible. M. KROTOSZNER.

#### BLADDER, URETHRA, AND PENIS

Clark, J. B.: Rupture of the Bladder. Ann. Surg., Phila., 1915, lx, 717. By Surg., Gynec. & Obst.

The author reports an intraperitoneal rupture of an apparently healthy bladder without evidence of external or direct injury not operated upon for twenty-four hours. The patient after a day of heavy drinking had fallen the evening previous to examination and was seized immediately with nausea and vomiting, and a very little later with severe abdominal pain, not intense enough, however, to prevent his walking home, but rapidly becoming severe enough to cause him to summon an ambulance to take him to the hospital. The symptoms were: abdominal pain, especially in the lower portion, inability to urinate, catheterized urine scant and bloody, and antiseptic fluid injected not all recovered in return flow; pulse 100; respirations 22; temperature 99°; slight abdominal tenderness; some percussion dullness not distinct enough to be significant of fluid; no sign of shock. At operation the extraperitoneal portion of the bladder was found to be intact; a transverse jagged rent was found in the apex; scant amount of bloody urine was in the peritoneal cavity. The rupture was sutured; external drainage was arranged down to the outer coat and a retention catheter inserted. was uneventful. Louis L. Ten Broeck.

Fuller, E.: Extraperitoneal Rupture of the Bladder; Its Surgical Management. J. Am. M. Ass., 1914, lxiii, 2114. By Surg., Gynec. & Obst.

Fuller pleads for more scientific surgical treatment of extraperitoneal rupture of the bladder, stating that many of these cases are left undiagnosed, and others which are diagnosed when treated by the usual methods recover only to a certain point and are de facto invalids. Usually the clinical symptoms of extraperitoneal rupture are slight and for this reason the condition is frequently overlooked. When seen early a case presents the differential diagnosis between anuria, intra- and extraperitoneal rupture. Its occurrence with fracture of the pelvis is most frequent and often the tears are multiple. The most frequent site is at or near the trigone. The occurrence in later observed and diagnosticated cases of urinary extravasation, with subsequent suppuration, is almost constant, the chief sites of these being posterior in the region of the rectal and seminal vesicles. His method of treatment is by his technique for seminal vesiculotomy. His results in the cases cited were most excellent. His mastery of this difficult technique often permits a complete dissection without the necessity of ligating a single vessel. J. S. EISENSTAEDT.

Lower, W. E.: Diverticula of the Urinary Bladder. J. Am. M. Ass., 1914, lxiii, 2015.

By Surg., Gynec. & Obst.

Lower reports seven cases and emphasizes the following points: He believes that in all of these cases the diverticula were acquired rather than congenital, because they were scarcely ever found in the young; because they seldom occurred in women; and because in most cases there was evidence of obstruction of the urinary outlet. Diagnosis may be made by the cystoscope and by the aid of collargol injections, taking the plates at different angles. The author believes that excision of the diverticulum is the only sure method of cure, especially if the opening be small and the sac large, and if infection be present. His technique consists of transverse incision under nitrous oxide-oxygen anæsthesia with local infiltration of novocaine. With curved forceps the bladder is brought up into the wound and dissected free from the peritoneum. After the bladder is opened the diverticulum is packed tightly with gauze through its opening, and then with the fingers inside the bladder, the index-finger in the opening of the diverticulum, and the thumb on the outside, the attachment to the bladder is exposed and divided. The bladder is then retracted away from the diverticulum, traction is made on the tumor and it is dissected free from the surrounding tissue. H. L. SANFORD.

Smith, E. O.: Tumors of the Urinary Bladder. Lancet-Clin., 1914, cxii, 611.

By Surg., Gynec. & Obst.

The author calls attention to the value of palpation in the diagnosis of tumors. Infiltrating tumors that can be palpated through the rectum or through the vagina bimanually are malignant.

The author makes a plea for early diagnosis, believing that the best results from surgery are obtained in cases in which an early diagnosis is made.

Every patient with hæmaturia should be given the advantage of an early cystoscopic examination.

The author mentions several cases treated with high-frequency current, and he believes that from three to ten treatments at intervals of from one to three weeks would completely destroy practically any papilloma. Several interesting case reports are cited.

Herman L. Kretschmer.

Hunner, G. L.: A Rare Type of Bladder Ulcer in Women. Tr. South. Surg. & Gynec. Ass., Asheville, 1914, Dec. By Surg., Gynec. & Obst.

The author reports eight cases of simple chronic ulcer of the bladder and draws a sharp contrast between these and the simple chronic ulcer commonly described as of the Fenwick type.

These ulcers are classified as simple because of an absence of a demonstrable source of origin and because of the histologic picture of the excised ulcer.

They have all been located in the vertex or free portion of the bladder wall, as contrasted with the Fenwick ulcer on the base.

On cystoscopy they are easily overlooked because of the slight mucous membrane changes, and the attention may first be arrested by seeing one or two extra pale white scar areas. Beside the scar area is seen a slightly hyperæmic spot or a collection of a few fine blood-vessels, and on touching this area with an instrument or with a cotton pledget blood readily oozes. At times the stretching of the granulating area incident to the ballooning of the bladder in the knee-breast posture causes a slight ooze and makes the area more easily found.

In spite of the very superficial appearance of these ulcers, they at times extend through all the coats of the wall and involve the peritoneum in thickening and adhesions.

Clinically they are characterized by pain, discomfort, frequency, strangury, and loss of rest at night, together with their chronicity and resistance to all ordinary forms of treatment.

The urine in all the cases was macroscopically clear and normal, but a microscopic study of the centrifuged specimen revealed in each case a few leucocytes and a few red blood corpuscles. In no case was there an associated bactinuria. The ulcer may temporarily heal on the surface when the urine becomes free of pathological elements until the surface is again broken. But one patient of the series had ever noticed blood in the urine, contrasting sharply with the Fenwick ulcer, in which the most important feature is hæmorrhage.

The diagnosis of this variety of simple chronic ulcer is fully established only after a failure to heal under ordinary forms of treatment, when excision of the inflammatory area with the entire subtending

bladder wall results in prompt recovery.

Chute, A. L.: A Plea for a More Extensive Operation in Cancer of the Bladder. J. Am. M. Ass., 1914, lxiii, 2266. By Surg., Gynec. & Obst.

In the opinion of the author there is no chapter in urinary surgery that is so absolutely discouraging as that which deals with the end-results, or so-called "cures" in cases of malignant disease of the bladder. At best the results are, in most cases, only palliative, especially in primary squamous-celled carcinoma, adenocarcinoma, and mucous cancer; the growths which infiltrate and lead to metastases. In spite of the more sweeping operations of transplanting ureters practiced in late years, the end-results are not noticeably better, and it is doubtful if the number of permanent cures is at all proportionate to the increased immediate mortality following this

more extensive operation. The author cites 29 cases, in 18 of which operation was performed. Of these 18, there was only one which was without signs of recurrence at the end of three years after operation, and in this case the operation was the least extensive of all, the incision going into the muscular layer only, not through it. Another case in which very extensive resection was done, showed at autopsy marked cancerous involvement in many retroperitoneal glands. The first case illustrates the fact that when a bladder growth is limited to the mucosa, one may excise it and have little fear of its recurrence, depending upon the belief that, from the very nature of the storage function of the bladder, its mucosa is either entirely without lymphatics or very poorly supplied with them, and that while a growth is actually confined to this layer, there is nothing in the way of metastasis possible, the only extension being by continuity. The second type of case quoted leads positively to the belief that it is in the domain of the lymphatic vessels and glands that we may look for an ultimate solution of the problem.

In other parts of the body resection for carcinoma is, as a routine, performed always with due consideration for the lymphatic area involved. fore such a type of operation can be standardized for the bladder, it will be necessary to gain a wider knowledge of the lymphatics of the bladder than is generally possessed at present. When this is done, the author believes, it will be found that a careful removal of the pelvic lymphatics will in properly selected cases greatly diminish the number of recurrences.

In 10 out of the series of 29 cases the bladder growth had its seat so close to the bladder outlet as to make its local removal impossible without destroying the outlet, in which case its total removal with the transplantation of the trigone and ureters would seem the rational procedure.

The author has always felt that total cystectomy was too fearful a mutilation to be advised often; yet, if the above-quoted series is an average one, we must evidently advise it in one case in three, if we are to remove the primary growth adequately. If, in these cases, the lymphatic current is found to be such that we can preserve that part of the trigone with the ureter openings and transplant it successfully into some part of the intestinal tract, the horror of total cystectomy will be materially lessened.

H. W. PLAGGEMEYER.

Heynemann, T.: Cystoscopic Findings in Carcinoma of the Cervix; Their Practical Significance (Zystoskopische Befunde bei bestrahlen Kollumkarzinomen und ihre praktische Verwertung). Strahlentherap., 1914, v, 92. By Surg., Gynec. & Obst.

In carcinoma of the cervix the bladder and ureters are apt to be involved early. Before they are actually involved there are changes in these organs resulting from the growth of the tumor. Winter, Zangemeister, Stöckel, Hannes, and Fromme have studied these changes with reference to the possibility of drawing prognostic conclusions from them, and Heynemann reports the results of examination of 30 cases. In 8 of the cases the changes were slight, only signs of inflammation being noted at the sphincter or in the region of the trigone: in 22 there were pronounced changes; in 12 bullous ædema of the mucous membrane; in 6 ædema of the bladder wall; and in 8 marked cedema of the mouths of both ureters. The cedema results from the exclusion of more or less extensive vascular regions by the growth of the tumor. The bullous ædema is the most advanced stage of the change.

In many cases under treatment the clinical and cystoscopic changes run parallel; but sometimes there is improvement in the clinical symptoms without improvement in the cystoscopic findings; this indicates continuance of treatment. If signs of beginning gangrene appear in the bladder mucous membrane there is danger of fistula formation, and treatment should be discontinued.

Goldman, M.: Cystoscopy in the Female. Am. J. Surg., 1914, xxviii, 466.

By Surg., Gynec. & Obst.

The author cites his experience and gives a description of cases in which he has used the Kelly method of cystoscopy. In his opinion, the Kelly method is the most practical and serviceable in all cases. He believes that ordinary cystoscopy in the female fails in several important factors; e.g., the direct observation of every part of the bladder, the urethra, and the ureteral meatus is not possible in every case. He calls attention to the ease of topical treatment, ureteral catheterization, and the removal of foreign bodies by the use of the air-distention or Kelly method. In using the water distention or ordinary method of exploration of the bladder with the cystoscope, the author finds the following difficulties: The female bladder will not yield to distention with water as easily as the male bladder, and about 5 per cent of the cases require an anæsthetic. If the bladder is distorted by pelvic displacements or pelvic tumors, one is easily confused in observing the interior of the organ. Urine or

pus in the ureteral specimen will cloud the field. There is difficulty in interpreting inflammatory areas and ulcers because of the poor distention with the water method. As an expert only can inspect the entire cavity of the bladder, minute lesions may evade the inexpert eye. It is impossible to apply medicines locally and to remove foreign bodies by the water distention method. All of these difficulties, the author believes, are overcome when the air method of distention is used with the patient

in the Kelly or knee-chest position.

Goldman emphasizes the necessity of cystoscopy in every major gynecological operation and in patients requiring catheterization either before or after operation. He believes that it would be much better if every abdominal case was subjected to cystoscopy before operation. When foreign bodies are encountered in the female bladder, they should be removed through the Kelly endoscope. When the following complications are present, the author finds it impossible to use the electric cystoscope: (1) inability of the vesicle sphincter to retain water in the bladder, (2) pus or blood escaping from the ureteral orifice or from a fistula which blurs the water medium, (3) resistance of the bladder wall to water distention.

The author reviews several cases and points out the importance of cystoscopy in the female when bladder symptoms are not relieved by operation or when urinary findings are present. In one case he found many small pieces of a glass catheter, several examinations being required before they were all removed. The importance is emphasized of the introduction of ureteral catheters into the ureters when extensive operations on the pelvis are contemplated. It is stated that this can probably be more easily done with the Kelly instrument than with the water or electric cystoscope.

The following conclusions are reached:

1. The electric cystoscope is indispensable to the general or gynecological surgeon and, to increase the percentage of correct diagnoses, the instrument should always be used.

2. As a routine procedure the Kelly method is the one of choice and superior to any other known

method.

3. The use of a cystoscope is not difficult and can be mastered by anyone who has patience and a desire to master it. It is a diagnostic aid and as a means of treatment it is indispensable. It should always be used in the examination of women presenting bladder symptoms.

G. J. Thomas.

Squier, J. B.: Subtotal Cystectomy. J. Am. M. Ass., 1914, lxiii, 2268. By Surg., Gynec. & Obst.

Although cancer of the bladder constitutes 3 per cent of all cancers in the male, until recently there has been no adequate surgical technique for its extirpation. The difficulties governing this condition have been the lack of a definite surgical anatomy, the questionable reparative power of the bladder, the question of conservation

of the terminal ureters, and hesitancy in attacking the problem along definite surgical lines. The ideal extirpative operation for vesical neoplasm will be a technique which conserves or reconstructs the three natural orifices of the bladder, at the same time removing the tumor en masse with iliac adenectomy when the glands are involved.

There is virtually no difference between intraperitoneal and extraperitoneal surgery for this class of work. The desirability of a wide free exposure of the entire posterior surface of the bladder cannot be too strongly insisted upon. The author's technique for subtotal cystectomy may be sum-

marized as follows:

Incision. Transverse or median longitudinal. The longitudinal incision begins one inch above the navel on the left side and extends to the symphysis.

Step 1. Divide the anterior sheath of the rectus 1 cm. to the left of the midline and displace the left rectus outward. The posterior sheath above the semilunar fold is divided, and the peritoneal fat is exposed from the navel to the symphysis. The urachus and obliterated hypogastric uterus are found underneath the fat layer. From here on the operation may be carried out entirely extraperitoneally, or transperitoneally.

Step 2. The peritoneum is incised from the navel to the level of the semilunar fold of Douglas, the patient being placed in the Trendelenburg position; the wound being protected with pads from implanta-

tion of tumor-cells.

Step 3. The urachus is grasped with a Barret intestinal forceps and traction is made upward, throwing into relief the obliterated hypogastric arteries as they divaricate to enter the true pelvis. The left obliterated hypogastric artery is grasped with forceps and traction made upward and to the right. By blunt dissection between the hypogastric artery and the lateral wall of the pelvis, the vas deferens is brought into view as it courses along the pelvic wall to the inner side of the obliterated hypogastric artery.

Step 4. With a blunt hook passed along the vas, the pelvic ureter is uncovered, the ureter being crossed on its inner side by the vas deferens. Any radical technique directed to the extirpation of neoplasm must have as its essential point the two

ureters exposed and constantly in view.

Step 5. Divide the urachus close to the summit of the bladder and draw the bladder downward toward the symphysis. If the peritoneum is not already infiltrated, divide freely including the pouch of Douglas, mobilizing the entire bladder except the pubovesical attachment. If the peritoneum is found firmly attached and already the seat of malignant attachment, this area is left undisturbed and a wide encircling incision is made about the infiltrated peritoneum.

Step 6. The divided lamella of peritoneum is carefully attached to the upper end of the abdominal incision, so that for further operative

purposes the peritoneal cavity is closed.

Step 7. A one-inch incision is made in the bladder high up in the posterior surface for inspection of the viscus.

Step 8. The neoplasm is excised en masse, together with a wide margin of healthy uninvaded tissue comprising the entire thickness of the bladder wall. If the ureter is affected it is divided between the ligature above the growth, and the distal portion is removed with the tumor.

Step 9. The hiatus of the bladder wall is partially repaired with a Connell intestinal suture; a stabwound is made through the bladder wall at a point approximating the normal ureteral opening, and the proximal end of the divided ureter drawn through this opening by a thin dressing forceps.

Step 10. The ureter is anchored to the bladder wall, allowing one-half inch to protrude, two flaps being dissected and anchored on the inner surface of the bladder. The remainder of the bladder is closed, and through a stab wound high on the anterior surface of the viscera a No. 26F soft rubber catheter is inserted and sutured in situ.

Step 11. The final step is the reposition of the peritoneum over the vesical suture line and an accurate closure of the peritoneum, care being exercised not to approximate the peritoneal and bladder suture lines. A cigarette drain is inserted into the back lateral space. In addition, a self-retention catheter is inserted.

It is often wise after excision to sear the cut edges of the bladder and wash out the bladder with 50 per cent resorcin or 1:5000 bichloride.

H. W. PLAGGEMEYER.

# Reynolds, E.: Complete Vaginal Extirpation of the Bladder for Malignant Disease. Interst. M. J., 1914, xxi, 1230. By Surg., Gynec. & Obst.

The author describes in detail a method of removing the bladder *in toto* through the vagina and transplanting the ureters into the anterior vaginal wall.

He makes a slit in the anterior wall of the vagina, first making a transverse incision, cutting immediately in front of the cervix, and, second, an incision along the median line of the anterior wall of the vagina.

A detailed description of this operation would occupy too much space. Reynolds admits that this method is new and has not been sufficiently tried out; but, nevertheless, he believes that the time may come when this technique will be worked out successfully and the vagina be used for the reservoir of urine.

He describes one case which was to some extent successful. Twenty-three days after the operation, the patient being in good condition, the vagina was closed by the denudation of the entire vaginal surface to a point just below the internal orifice of the urethra and to a corresponding height on the posterior lateral walls. The upper part of the wound was brought together by buried catgut sutures and the lower part by silkworm sutures. A soft catheter

was tied to the urethra and left until eight days later, when it was withdrawn and the patient passed urine voluntarily. In a few days, after the withdrawal of the catheter, the patient's temperature went up to 99° and 100°. She was discharged at the end of 12 weeks with a normal temperature and free from discomfort, but later died from pyelitis.

In conclusion, the author says that in another case of this character he would not be disposed from present information to hold out any great hope of prolonged life, but if the disease had gone too far to permit of a hopeful resection, and the symptoms were distressing, he would still regard it as the best method of obtaining euthanasia.

A. C. STOKES.

#### Lowsley, O. S.: Congenital Malformation of the Posterior Urethra. Ann. Surg., Phila., 1914, lx, 733. By Surg., Gynec. & Obst.

Lowsley reports a case of congenital obstruction to the male urethra at the outermost end of the verymontanum

The child, aged three and one-half months, was admitted to the hospital July 30, 1913, as an urgent case. It had a temperature of 105° and died a few hours afterwards with ædema of the lungs. The only history obtainable was that the child had been ill for a few days only and the mother had noticed nothing unusual about its micturition.

Autopsy showed that the urethra just anterior to the verumontanum was completely occluded by a band extending entirely across the same, which band was perforated at one point and allowed the urine to go through drop by drop, but evidently not as rapidly as it was secreted.

A long discussion is given of this case and the pathological findings are very minutely described. A bibliographic report is appended which includes a discussion of many of the reported cases.

There is no doubt, the author believes, that on account of the urinary obstruction to the outflow the dilatation of the bladder, ureters, and kidney in his case began as soon as the kidneys began to secrete. The bladder undoubtedly filled up and its repeated contraction caused dilatation of the posterior urethra, bladder, and kidneys. He infers that a certain number of hydonephroses are due to just such instances, and that possibly many are not diagnosed during life.

A. C. STOKES.

### Vinson, J. C.: Gumma of Anterior Urethra. South. M. J., 1914, vii, 883.

By Surg., Gynec. & Obst.

Vinson remarks the infrequency of gumma of the anterior urethra, quoting Stengel's statement of its histopathology. The case reported concerned a man, aged forty-three, who sought medical aid for stricture. The family history was negative. The patient admitted a complicated gonorrheeal infection but denied the possibility of lues. Signs of stricture evidenced themselves three months

before he sought treatment. Examination revealed a well-defined tumor extending from the meatus along the urethra for two inches, forming a cuff one-fourth inch in thickness entirely around the urethra. Wassermann test was positive. A section from the new-growth agreed with the histopathology of gumma. Increasing doses of potassium iodide caused the rapid disappearance of the J. S. EISENSTAEDT.

Hinman, F.: Priapism. Ann. Surg., Phila., 1914, lx, By Surg., Gynec. & Obst.

Pathologic erections may be grouped into two distinct classes: transitory erections and true priapism. Erections of short duration are relatively common with all inflammatory conditions of the lower genito-urinary tract, and sometimes accompany certain diseased conditions of the nervous system. They are pathologic in the sense that they are painful and without sexual desire; but their frequent occurrence, short duration, and tendency to recur strongly distinguishes them from the uncommon and remarkable condition of prolonged and persistent erection. Many cases of true priapism, however, are preceded by these transitory erections and, therefore, such cases are of importance as a factor of predisposition to the rarer and more serious condition.

Transitory erections may be of two kinds:

1. Acute transitory erections which occur commonly as reflex forms with any abnormal condition of the lower genito-urinary tract and which clear up permanently with relief from this trouble. Twenty of such transitory erections have been reported as cases of true priapism and all were due to an ascending peripheral stimulation, as the result of irritation from some disease of the genitals: urethritis, 12 cases; polypi in the posterior urethra, 3 cases; and one case each from stricture, chancroid, herpes

genitalis, venereal warts, and varicocele.

2. Chronic transitory erections which are painful, usually nocturnal, and of short duration, but of such frequent recurrence and extending over such a long period as to greatly interfere with sleep and with the pursuit of the patient's occupation. Nineteen of such cases have been reported as cases of true priapism. They are found to be mostly nervous in origin. Nine occurred in the early stages of tabes dorsalis, 6 had some definite but obscure psychic cause, 3 were the result of some irritation of the brain or cord center from infectious toxines, the erections recurring and subsiding with the rise and fall of the temperature, and one case was the result of an overdose of cantharides.

True priapism, in contradistinction to these transitory non-sexual erections, is a remarkable pathologic condition of prolonged and persistent erection unaccompanied by sexual desire, and usually painful. It responds to no form of medication and subsides spontaneously, sometimes quickly but usually very gradually. Its pathogenicity is obscure and the condition is very rare, there being only about 170 cases reported in the whole medical literature. The dual mechanism, nervous and circulatory, of normal erection, although complex, indicates a dual pathogenicity for the pathologic manifestation, and every case of true priapism in the final analysis may be grouped as due either to a nervous or a mechanical factor or to a definite combination of these.

According to this pathogenicity the cases may be classified as-

I. Due to nervous causes..... 35 cases 1. From ascending peripheral stimuli (reflex)..... 3 cases 2. From direct stimuli . . . . . . . 15 cases (a) To the spinal cord center. (b) To the nervi erigens or pudens.

3. From descending cerebral stimuli... 17 cases (a) Direct.

(b) Indirect.

- II. Due to local mechanical causes . . . . . 135 cases 1. Thrombosis or pseudothrombosis....125 cases
  - 2. Hæmorrhage and hæmatoma ...... 7 cases
  - 4. Inflammatory swellings and cedema of the penis .....

Of the 170 cases of true priapism analyzed, 35 may be attributed to nervous causes and form a very interesting group. Only 3 were the result of ascending peripheral stimuli and these were all of only a few days' duration. The remaining 32 cases were the result of descending impulses, 17 from the brain and 15 from the spinal cord. Five cases associated with nasal polypi suggest an interrelation with the "genital spots" of Fliess and a therapeutic measure in certain cases of psychic priapism.

There were 135 cases which had a mechanical or a combined nervous and mechanical element as a cause for the priapism. Thrombosis of the veins of the corpora cavernosa was by far the most common factor, and may be assumed to have occurred in 125 of the cases. Forty-five cases show a definite relationship to leukæmia, and the pathogenesis in these cases is probably both nervous and mechanical in character. The mechanical factor is thrombosis or pseudothrombosis. The nervous factor is probably incited by the condition of the blood, setting up a reflex erection (over 50 per cent were preceded by intermittent transitory erections), which is then prolonged by a subsequent thrombosis. The explanation of these cases of mechanical priapism lies for the most part in the principles of thrombus formation. There is a slowing of the blood stream with a widening and stretching of the vessels and the formation of eddies. Blood-platelets or leucocytes are deposited, and, in case the factor of agglutinability is present, are cemented together so as to plug the vessels. Later there may or may not be the liberation of fibrin and coagulation.

Thirty-four of the cases have been treated by operation with immediate cure in all but 2 cases, one of which was of nervous origin; the other operation was a failure apparently because the incisions were too superficial. The division of pathologic erections into four groups suggests the need of a different procedure in the treatment of each group. Acute transitory erections demand local treatment of the inciting genital condition. Chronic transitory erections, on the other hand, since they are so frequently of nervous origin, will often demand operative measures along the same lines as for ner-The treatment of priapism of vous priapism. nervous pathogenesis requires thorough general measures before operative intervention is considered. Eighty per cent of cases have a duration of less than 10 days and, particularly in the brain or spinal cord injury cases, the general condition of the patient is so serious that the priapism is of minor and secondary importance. For the priapism of mechanical pathogenesis, of which about 95 per cent are due to thrombosis or pseudothrombosis, a simple and effective operative treatment consists in incision and drainage of one or both corpora cavernosa. In the 33 cases in which it has been used this procedure failed to effect a cure only once, the incisions in this case being too superficial.

#### GENITAL ORGANS

Corner, E. M.: Extended Clinical Experience in the Treatment of Imperfectly Descended Testicles. Clin. J., 1914, xliii, 681.

By Surg., Gynec. & Obst.

The imperfect descent of the testicle is usually due to partial development of the tunica vaginalis forming a potential hernial sac. This is a congenital deformity which shows in the anatomy and physiology of the testicle. Expectant treatment is terminated by the appearance of a hernia. Operative procedure is then indicated. This may be done in one of three ways as follows:

The hernial sac is divided and stripped of the cord, allowing the testicle to descend. This is called orchidoplasty, and it is done in 40 per cent of the author's cases. Orchidopexy is done when the testicle is fixed in the scrotum. It is only indicated when there is a combined congenital condition causing hernia and imperfect descent, for atrophy and fibrosis may follow, thus destroying the internal secretion. It is done in 10 per cent of the author's cases.

After twenty years of age orchidectomy is usually advisable, especially if the imperfect descent is unilateral. The after-results are satisfactory. In some cases it is preferable to return the gland to the abdomen intraperitoneally. This is an orchidocœlioplasty. Increased dangers of theoretical malignancy or of gonorrhœal orchitis are greatly overestimated. The internal but not the external secretion is preserved. It is performed in 50 per cent of the author's cases.

The summary is based upon the patient's age.

Up to five years, operation is advised if a hernia is present; orchidoplasty is preferred. Between seven and twenty, operation is indicated, either orchidoplasty, orchidectomy, or orchidocœlioplasty being chosen. After twenty years, an orchidectomy is indicated. C. D. PICKRELL.

Rigdon, R. L.: Does a Relationship Exist Between Tuberculosis of the Epididymis and Tuberculosis of the Kidney? Calif. St. J. Med., 1914, By Surg., Gynec. & Obst.

In the consideration of tuberculosis of the epididymis and kidney, the author, analyzing 112 cases of tubercular epididymitis reported by Barney, found 4 only in which the kidney was involved. He further reports that in 99 patients with epididymal tuberculosis, 54 per cent showed prostatic involvement in the first year, and 35 per cent showed vesical symptoms.

Keyes, reporting 100 cases of tuberculosis of the epididymis, states that 11 gave evidence of previous kidney involvement; in o cases extension took place from the testicle to the kidney.

Cholzoff, in 74 cases of genital tuberculosis, found 5 cases of kidney involvement.

In Braasch's report of 203 cases of renal tuberculosis he noted 60 per cent with evidence of genital involvement, the epididymis being most frequent. IRVIN S. KOLL.

Smith, D. O., and Frayser, B. H.: Operative Treatment of Acute Epididymitis. Ann. Surg., By Surg., Gynec. & Obst. Phila., 1914, lx, 719.

The authors' note the scarcity of case reports concerning the procedure and discuss the symptomatology of this condition fully. They place great emphasis on the permanent damage, such as retention cysts, glandular atrophy, fibrous hypertrophy, frequently encountered as a result of acute epididymitis. They claim that operative procedure diminishes the extent of the damage, lessens the pain, and hastens the recovery, which is also more complete.

General anæsthesia is preferred, although novocaine has been successfully used. An incision is made large enough to deliver the testicle, which may not always require delivery; the inflamed portion is exposed and multiple puncture made with a blunt instrument - probe. The occurrence of hydrocele or abscess makes a more extensive procedure imperative. In the absence of complications the incision is closed by suture and a gauze drain inserted. Usually by the fourth day the patients are up and by the sixth day are out of the hospital.

The authors' experience covers 300 cases. A fall in temperature has been noted following operation, generally in 36 hours; there were no relapses, no nodular induration, and in a few observed cases there was a fall in the leucocytic count. No infection has been known to follow this procedure.

LOUIS L. TEN BROECK.

Herbst, R. H.: The Treatment of Hydrocele, with Special Reference to Phenol Injection. J. Am. M. Ass., 1914, lxiii, 2219. By Surg., Gynec. & Obst.

Herbst calls attention to the importance of a preliminary tapping in all cases of hydrocele when the sac of the tunica vaginalis is well filled with fluid and it is difficult or impossible to palpate the contents of the scrotum, believing that in most cases there is an underlying pathology which should be determined before choosing between one of the open operations and the injection of carbolic acid.

He states that in many cases an open operation is not only unnecessary, but contra-indicated; viz., in cases where the hydrocele is secondary to advanced tuberculosis of the genital tract and in

cases of syphilis of the testicle.

Recurrences following the carbolic acid injection method are extremely rare if the sac is thoroughly washed with sterile water before the phenol is injected. The author emphasizes the importance of washing out the sac, and reports excellent results with this method of treatment. In cases of chronic pachyvaginalitis in which the sac wall has become greatly thickened, he prefers excision to either eversion or injection. The injection of phenol is not followed by atrophy of the testicle, although it may rarely produce a peritesticular sclerosis.

Cumston, C. G.: The Dangers Connected with Removal of the Seminal Vesicles. Am. J. Urol., 1914, X, 521. By Surg., Gynec. & Obst.

The removal of the seminal vesicles is not a simple operation, as suppuration and fistula frequently occur. There are three routes for operative attack on the seminal vesicle: anterior, inferior, and posterior. In the anterior route the chief difficulties are rupture of the vas, which usually occurs near the junction of the vas with the vesicle, and if the vesicle has been dissected slightly it may even bring portions of the vesicle with it. Wounds of the ureter and tears of the vesicles are very common and are troublesome because of oozing. In the perineal route, the chief complications are those due to isolation of the vesicle: namely, hæmorrhage and urinary fistula; opening of the rectum may take place and suppuration is common. The posterior operation is performed through the sacrum and the coccyx. The shock is great and the danger of hæmorrhage, opening of the rectum, and suppuration are present at all times.

In conclusion, the author states that the removal of the vas and vesicles should be limited to a small group of selected cases. The simple removal of the epididymis and as much of the vas as it is possible to remove through the external abdominal ring usually will be sufficient. V. D. LESPINASSE.

Neuber, C. E.: Carcinoma of the Prostate (Über Prostatacarcinome). Ztschr. f. urol. Chir., 1914, By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The number of authentic cases of carcinoma of the prostate has increased recently on account of

more refined methods of diagnosis, more extensive operations, and more accurate pathological-anatomical examinations. It now constitutes about 1.42 to 2 per cent of all carcinomata.

The histories of 30 cases are given and discussed in detail both from the clinical and pathologicalanatomical point of view. The ages range from 40 to 88 years, the sixth decade yielding the greatest percentage. The cases sometimes are of very long duration - 15 to 20 years - especially when there are bone metastases. Both the local and general symptoms are very uncharacteristic. On rectal palpation the gland is frequently very painful and hard. All forms and sizes of tumors appear.

Transmission to the bladder, rectum, and other pelvic organs are discussed. Liquefaction of the tumor is rare, lymph-gland metastases are frequent, especially in the true pelvis and retroperitoneally. Bone metastasis is important, as it appears in the form of softening or as osteoplastic carcinosis. The spinal column, pelvis, and femur are most often involved. Certain places in these are most often affected, and the exact localization of these places is

shown.

In all suspicious cases of tumors of the prostate a röntgen examination should precede an operation, which may be shown to be useless. Neuralgia, sciatica, and pain in the bones in old men should lead to early röntgen examination and arouse a suspicion of carcinoma of the prostate. This typical form of metastasis is discussed from the standpoint of pathology, and further complications are mentioned, such as spontaneous fractures, metastases in the liver, lung, kidney, pleura, and dura, as well as ruptures of the cancer into the bladder and rectum. HOFFMANN.

Keyes, E. L., Jr.: A Method of Diminishing Hæmorrhage after Suprapubic Prostatectomy. J. Am. M. Ass., 1914, lxiii, 221;

By Surg., Gynec. & Obst.

The method consists of passing a suture from the perineum into one side of the bladder neck-after removal of the hypertrophied prostate—out again through the other side and back into the perineum where the suture is drawn tightly over a gauze pad. To avoid fistula the suture must be removed the following day. The details are too complicated to be abstracted. Keyes claims for his suture rapidity, simplicity, and relatively complete checking of hæmorrhage.

Thomas, B. A.: The Rôle of Functional Kidney Tests and Pre-Operative and Post-Operative Treatment in the Reduction of Prostatectomy Mortality. J. Am. M. Ass., 1914, lxiii, 1909. By Surg., Gynec. & Obst.

In the estimation of renal sufficiency in candidates for prostatectomy, Thomas proposes an "index of elimination" with indigo-carmin. The index is determined by dividing the quantity of the dye eliminated during the first hour by the quantity

eliminated during the third hour after injection. This quotient, according to Thomas, is a truer guide as to the renal function, both from a clinical point of view and from operative results, than any other method that he has utilized. In a series of normal cases the index of elimination averaged 5.1.

In cases with diseased kidneys the onset of elimination is delayed and the amount of early elimination proportionately diminished, while the duration of elimination is prolonged. The relative outputs of the first and third hours will therefore have more significance than the determination of the mere quantitative output for the first two hours. When the third-hour output equals or exceeds that excreted in the first hour—index of elimination I. or less—the finding possibly contra-indicates serious operative intervention, namely, prostatectomy, unless the total amount eliminated in three hours exceeds 20 per cent, when operation may be considered even though the index of elimination be very low.

#### MISCELLANEOUS

Barney, J. D.: The Ultimate Results of Genital Tuberculosis in the Male. J. Am. M. Ass., 1914, lxiii, 2274. By Surg., Gynec. & Obst.

In a series of 154 cases of genital tuberculosis Barney found the disease present in other organs in 55.8 per cent, the lung being most frequently involved in 35 cases, 22.7 per cent of the whole. Kidney and bone infections came next with seven cases each.

Among the 154 cases, renal tuberculosis occurred in 18; it preceded the genital lesion in 7, and followed it in 11. It is thus seen that the infection more frequently extends upward than downward, a fact which in the author's opinion favors strongly the belief that the tubercle bacillus spreads via the lymphatics. In cases in which epididymal tuberculosis on one side is followed by an involvement of the opposite kidney, it is to be accounted for by a crossing of the lymphatics at the base of the bladder. The guinea-pig test of the bladder urine in such cases is a point of the utmost importance, not only for purposes of diagnosis, but also of prognosis. If a positive test is obtained, it shows either that there is renal involvement, or that the bladder has become infected by extension of the disease from the prostate or seminal vesicles. In 8 out of 10 of this series tubercle bacilli were found in the urine before operation. The urines of those now dead contained pus, blood, albumin, and casts in various combinations in 77 per cent, while of the patients living the urine was pathologic in but 38 per cent.

The operative mortality for the 154 cases was 2.59 per cent. Of 113 patients traced, over 27 per cent

have died of some form of tuberculosis. Forty-one per cent of 58 patients have died of this disease within a period of six years after operation. Of the deaths from tuberculosis, 14.2 per cent occurred within one month, 32.1 per cent within six months, and 50 per cent within one year after operation. During the first six years 85 per cent died, while between the ninth and eleventh years 10.7 per cent succumbed. Miliary, renal, and lung tuberculosis are, in order, the final types of the disease. A large majority of those dying of tuberculosis had had one or more outbreaks of the disease both before and after operation. Barney's experience warrants the conclusion that until at least ten years have elapsed after operation, no patient can be said to be cured of tuberculosis.

The records of those now living show a much smaller percentage than do those of the dead, of other tuberculous processes before operation, but many of them have since developed other foci. As 81 per cent of those examined and 28.5 per cent of those heard from are still within the six-year period, in which it was found that 85 per cent of deaths had occurred, it is to be expected that the deaths from tuberculosis in this group are not yet at an end.

While genital tuberculosis, even if unilateral, results in sterility in most cases, neither the disease nor the operation for its relief, including double orchidectomy, seems to impair masculinity.

In not one of one hundred cases of epididymectomy has a subsequent orchidectomy been necessary, although in three instances there has occurred a tuberculous funiculitis simulating testicular involvement. This is remarkable in view of the fact that the testicles were found to be macroscopically tuberculous in 44 per cent, and microscopically so in cases of orchidectomy in 66 per cent. Where experience and judgment are exercised, the testicle need rarely be removed, for, unless very extensively involved, curettage or excision of the tuberculous foci is sufficient.

Although the prostate and seminal vesicles are secondarily involved in most cases of epididymal tuberculosis (65 cases in this series), their condition will improve or heal after removal of the epididymis. Radical surgical treatment of these organs is unnecessary and unwise. The long life and good general condition of many patients, even though suffering from repeated outbreaks of tuberculosis, shows that the survival of the patient depends largely on his ability to immunize himself to the disease. Therefore, our efforts must be directed, not merely toward suitable surgical treatment, but also toward helping the patient develop that immunity which is so important. For this purpose hygiene, sandalwood oil, and tuberculin are essential.

#### SURGERY OF THE EYE AND EAR

EYE

Appleman, L. F.: Ectropion of the Eyelids Corrected by Skin-Grafts. Ophthalmol., 1914, xi, 49.

By Surg., Gynec. & Obst.

Appleman reports a case of cicatricial ectropion, following burns from an explosion, which was corrected by skin-grafting. The technique used consisted of an incision through the cicatrix on the forehead with complete separation of adhesions so as to allow the upper lid to drop to its normal position. In this position it was secured by three anchor silk sutures holding its free margin in approximation with the skin of the cheek to allow for subsequent shrinkage. The exposed areas were covered with skin-grafts dressed with oiled guttapercha tissue and held in place by light compresses After the second day warm compresses wet with a I:10,000 bichloride solution were applied. The sutures were removed on the fourth day. The result was good.

Ectropion of the lower lids was corrected by a similar procedure, but in this instance the margin of the lower lid was held in slight overcorrection by

suturing it to the margin of the upper lid.

Appleman is of the opinion that oiled guttapercha dressings in skin-grafts are better than compresses for promoting healing and preventing suppuration. A wide margin of overcorrection must be aimed at in all such operations to allow for subsequent shrinkage of the cicatrix.

E. F. Slavik.

Todd, R.: Extra-Ocular Tendon Lengthening and Shortening Operations Which Enable the Operator to Regulate the Effect. Ophth. Rec., 1914, xxiii, 628. By Surg., Gynec. & Obst.

Todd describes his method of graduated tenotomy in which cuts are made at alternate positions on opposite sides of the tendon, and a tucking operation in which the muscle is rolled around on an

instrument and then secured by suture.

The tenotomy cuts extend through more than one-half the width of the tendon. Two or three are usually sufficient. This leaves the tendon in the form of a "Z" or "W." The author claims that the dangers of correction are eliminated and the opportunity for regulating the amount of the result greatly improved.

In the tucking operation the tendon is dissected free and is doubled on itself by a special instrument by which the amount of overlap can be regulated. The approximated surfaces are abraded and then sutured by passing two catgut ligatures through the center of the overlapped portion and tying one each way, thereby constricting the tendon in two

bundles. Two silk sutures pass through back of the first including the conjunctiva, pass forward and through the episclera very near the corneal border and parallel to it, one up and one down. The corneal end of each is united with the portal end, and the amount of pull exerted in making this knot regulates the amount of correction. These ends may be tied temporarily and changed at a later date if necessary, as they are outside of the conjunctiva.

The article includes case reports and illustration of the steps of the operation.

E. B. FOWLER.

Greeves, R. A.: Case of Supernumerary Punctum Lachrymale and Canaliculus. Proc. Roy. Soc. Med., 1914, vii, Sect. Ophth., 141.

By Surg., Gynec. & Obst.

Greeves reports a case of supernumerary puncta and canaliculi in which two distinct ducts leading to the lachrymal sac were present on the lower lid. The upper punctum and canaliculus were normal. He states that more than 40 cases of supernumerary puncta have been published; they are usually found on the lower lid, and none of the cases was bilateral.

The nasal duct appears the sixth week of fœtal life. From a solid epiblastic cord, appearing as a thickening in the lachrymonasal groove, an expansion with two outgrowths at its upper end appears, which structures later become hollowed in the center to form the canalicular sac and duct. The presence of supernumerary parts may be explained by the assumption of supernumerary outgrowths from this epiblastic cord. W. G. REEDER.

Green, L. D.: Recent Advances in the Treatment of Dacryostenosis. J. Ophth. & Oto-Laryngol., 1914, viii, 383. By Surg., Gynec. & Obst.

Green reviews West's method of producing a permanent opening from the nose into the lachrymal sac. Attention is called to the desirability of preserving the canaliculus, as the function of the lachrymal apparatus is more perfectly regained. He reports two cases, in one of which both sacs were opened with successful results.

W. G. REEDER.

Gibbons, E. E.: Keratoconus. Ophthalmol., 1914, xi, 77. By Surg., Gynec. & Obst.

Gibbons reports a case of a cortical cornea improved by flattening of the cornea by the application of a cautary electrode close to the surface, but not in actual contact; being constantly moved about in a circle over the area 3 mm. in diameter. After several months a bilateral iridectomy down and in was performed. Vision was markedly improved from 12/200 RE and LE to 20/50 RE and 20/40 LE

with -5x30° and -5x10° respectively. Very little irregular astigmatism remained after the operation.

E. F. SLAVIK.

Fleischer, B.: A Case of Bilateral Keratoconus Examined Anatomically; the Hæmosiderin Ring of the Cornea in Keratococcus; and Hæmosiderosis of the Eye in "Diabete Bronze." Arch. Ophth., 1914, xliii, 620. By Surg., Gynec. & Obst.

Fleischer found that the brown ring in the case of keratoconus was hæmosiderin which had diffused into the corneal epithelium from small hæmorrhages occurring in connection with defects in Bowman's membrane. His explanation of the ring formation is that a small blood-vessel with a granule of hæmosiderin adjoining it, just below the defect in Bowman's membrane, ruptures and diffuses hæmosiderin through the corneal epithelium which spreads out into circular form because of the pressure there. He does not claim that the ring bears any relation to the etiology of keratoconus, since he found this same ring in a case of "diabete bronze."

Wray, C.: The Operative Treatment of Keratoconus—Conical Cornea. Proc. Roy. Soc. Med., 1914, Sect. Ophth., vii, 152.

By Surg., Gynec. & Obst.

When the diagnosis is certain and the patient is over 25 years of age some form of active treatment is indicated, especially if the astigmatism is progressive. Rules as to cauterization cannot be exact. At least three sittings are usually necessary with Snell's cautery at almost a black heat. Sufficient reaction must be obtained to result in the formation of connective tissue. When thinning of the cornea is pronounced, little connective tissue results from a single cauterization. An iridectomy or trephine is advised by some surgeons to reduce the tension of the anterior chamber. A series of six cases is reported with good results.

W. G. Reeder.

Vail, D. T.: Delayed Healing of the Wound in Cataract Extraction, and Its Proper Treatment. Ohio St. M. J., 1914, x, 742. By Surg., Gynec. & Obst.

Vail reports 3 cases of delayed union of the wound of incision after cataract extraction, in which a hitherto unsuspected cause for retarded healing was perceived and treated accordingly, with prompt

and most gratifying results.

In the absence of the common causes of retarded restoration of the anterior chamber in his cases, such as the presence of shreds of capsule, tags of iris, hernia of iris or vitreous, fragments of lens, blood-clots, etc., the writer actually observed with the Berger loupe intermittent spurts of escaping aqueous, and attributed it to the orbicularis. He rightfully concludes that this alternate contraction and relaxation produces sufficient recurrent pressure on the convexity of the cornea to allow the

aqueous to leak just enough to hinder the healing

process.

Tenotomy of the orbicularis brought about the prompt restoration of the anterior chamber and verified the observations and forces at work in these particular cases. The muscle was cut both upward and downward at right angles to the external palpebral ligament. The anterior chamber remained empty for 26, 14 and 12 days respectively, but re-formed in 24 hours in all 3 cases after this simple operation.

G. D. THEOBALD.

Hansell, H. F.: The Extraction of the Cataractous Lens in Its Capsule, as Practiced in the Coltea Hospital, Bucharest, Roumania. *Penn. M. J.*, xviii, 171. By Surg., Gynec. & Obst.

Hansell gives a brief and clear description of Stanculeanu's operation for the extraction of the lens within its capsule.

In every case a conjunctival sliding flap is made above, which when drawn down after the extraction is completed and properly sutured will cover the

upper third of the cornea.

The advantages of the flap are preservation of intact vitreous, rapid closure of the corneal wound, prevention of entrance into the anterior chamber of foreign or septic material, and a safeguard from accidents during convalescence. A corneal section comprising one-half or nearly one-half of its circumference should be made in the corneal rather than in the scleral limbus. After making a narrow iridectomy the largest possible fold of capsule is grasped by specially designed sickle-shaped forceps; wide horizontal, upward, and downward movements are made to rupture the zonula, after which the forceps are withdrawn and then with gentle pressure the lens is expressed in the usual way.

Two comprehensive conclusions seem justifiable:
(1) Stanculeanu's operation is to be recommended only in incomplete senile cataracts, both mature and immature. (2) It is not adapted to the extraction of hypermature cataracts. G. D. Theobald.

Eason, H. L.: Piece of Steel in the Vitreous. Proc. Roy. Soc. Med., 1914, Sect. Ophth., 150.

By Surg., Gynec. & Obst.

Eason reports a case of steel in the vitreous which could be seen lying on the retina below, internal to the disc and uncovered by exudate. There was a subhyaloid hæmorrhage and some exudate in the neighborhood of the foreign body. The iris was discolored. Vision was 6/9. Eason advised leaving the foreign body alone for the present.

W. G. REEDER.

Cantonnet, M.: Traumatisms of the Eye and Their Consequences from the Medicolegal Aspect. *Univ. M. Rec.*, 1914, vi, 369.

By Surg., Gynec. & Obst.

The different solids, fluids, and gases causing burns of the eye are enumerated, and among them vitriol is given first place. The various parts of the eye which are subject to burns are discussed, the first being the lids. The gravest danger is cicatricial ectropion and its sequelæ, such as ulceration of the cornea.

Emphasis is laid on the sensitiveness of the cornea following burns, especially those in which there is a leucoma. The author states that some leucoma can be cured, but that where anæsthesia is present a

grave prognosis is given.

Ulceration with perforation and symblepharon are briefly considered. Removal of the caustic, etc., from the eye, in the author's opinion, constitutes the best emergency treatment for burns of the

Secondary cataract and glaucoma following penetrating wounds and contusions are discussed very briefly. Severance of the optic nerve following basal skull fracture, also sympathetic ophthalmia are also discussed.

Sydney Walker, Jr.

## Love, J. M.: Simple Angioma of the Choroid. Arch. Ophth., 1914, xliii, 607.

By Surg., Gynec. & Obst.

Love concludes from his case, which he compared with all others on record, that angiomata of the choroid have their origin in the macular region; that they are simple, not cavernous, in type, and are probably due to some congenital disturbance in the innervation of the vessels supplying the affected region. The cases referred to are twenty-one in number, six of which were associated with nævi of the face. Clinically, they have been found in the macular region, as evidenced by a central scotoma and a contraction in the field of vision; pathologically, by increased thickening there. This case showed no vascular spaces with septa, but an abnormal growth of capillaries with varying amounts of stroma, which points to its simple character.

From an examination of one hundred and fiftyone cases of angiomata of the skin an intimate
connection was traced between them and angiomata
of the choroid. Both are similar in structure and
appear during the formation and growth of the vascular system; and as a congenital disease of a single
spinal ganglion originating in the uterus is the cause
of the skin degeneration developed in the peripheral
region of the corresponding spinal nerves, it is reasonable to conclude that the same factors produce a
similar condition in the choroid.

C. A. Maghy.

#### Mayou, M. S.: Optic Neuritis with Symmetrical Loss of the Lower Portion of the Field Associated with Diabetes. Proc. Roy. Soc. Med., 1914, vii, Sect. Ophth., 148.

By Surg., Gynec. & Obst.

Mayou reports a case of symmetrical loss of the lower portion of the field associated with diabetes. The right eye, first affected, showed an optic neuritis with swelling of 5D. One antrum was found full of pus and was drained. Seven months later an optic neuritis of the left eye developed. At this time the urine was found to contain a large

amount of sugar. A diabetic diet resulted in a slight improvement of the fields. W. G. REEDER.

Henderson, E. E.: Rupture of the Optic Nerve at the Lamina Cribrosa. Proc. Roy. Soc. Med., 1914, Sect. Ophth., 158. By Surg., Gynec. & Obst.

Henderson reports a case of rupture of the optic nerve at the lamina cribrosa in a boy who had been struck by a brick over the right eye. The iris was tremulous, there was blood in the anterior chamber, and there was no perception of light. A fortnight later the vitreous had cleared, showing a rupture in the lower half of the disc surrounded by hæmorrhage. The literature records eleven other cases.

W. G. REEDER.

# Elschnig, A.: The Accessory Cavities of the Nose in Connection with the Pathology of the Eye (Bedeutung der Nasennebenhöhlenaffektionen in der Pathologie des Auges). Med. Klin., Berl., 1914, x, 1446. By Surg., Gynec. & Obst.

Elschnig expatiates on the great importance of the part played by the nasal accessory sinuses in the pathology of the eye. This is a discovery of the last decade, he says, and even now its importance is not appreciated until the prompt cure of a recurring iridocyclitis is witnessed, for example, when a suppurating process in an accessory sinus is discovered and cleaned out. Neuritis of the optic nerve may develop from propagation of the suppurative process to the brain directly, or indirectly through the meninges. In other cases the trouble is from compression of the orbit, eyeball, or optic nerve from the enlarged sinus.

The most serious and most common eye trouble secondary to sinusitis is inflammation of the optic nerve. The author has encountered 16 unilateral cases of this kind; in 3 cases the ophthalmoscopic findings were normal, the neuritis being altogether retrobulbar; in 9 there were slight evidences of inflammation in the papilla, and in 4 severe intraocular neuritis with choked disc. In 6 of the 14 cases measured there was slight exophthalmos. In 7 cases the pupil was dilated but the reactions were not impaired. In 10 cases vision had been almost entirely lost on that side; in 3 there was merely central relative scotoma, and in 3 absolute scotoma. Only in the severest cases was there restriction of the field of vision, especially for colors.

In all but 4 cases vision returned nearly or entirely to normal after treatment of the suppurative process in the accessory nasal sinus. In these 4 cases the eye trouble was of from four to fourteen days' standing; in 2 there was advanced intra-ocular neuritis; in 1 slight neuritis; in the other case the find-

ings were normal.

The sinus trouble ranged from mere catarrh to the severest hypertrophy, polyp growths, or suppuration in the different cases; in only 5 cases was the sinusitis suspected by the patient or physician, and in only one of these had its connection with the eye affection been suggested. The blind spot was not enlarged

in any instance. When both eyes were affected the pupils were widely but irregularly dilated and the

reactions were not always quite normal.

The diagnosis is peculiarly difficult when there is some nervous affection in addition to the sinusitis. Retrobulbar neuritis with central scotoma is by no means uncommon in multiple sclerosis. Sinusitis was found also in 3 cases of brain tumor and one of multiple sclerosis, but the eye trouble persisted unmodified after the cure of the sinusitis under treatment. Syphilis was demonstrated in 5 of the total 35 cases of nasal sinusitis in ophthalmological cases; orthostatic albuminuria, extreme indicanuria, or cardiac defect was evident in one case each. In five cases the amblyopia had been attributed to tobacco poisoning until the sinusitis was discovered.

During the seven-year period in question Elschnig has encountered 208 cases of disease of the optic nerve; the 35 cases with sinusitis, therefore, form

15 per cent of the total material.

The prompt subsidence of the neuritis when the sinusitis is treated in time shows that with irritation of the optic nerve there is generally a curable stage if the toxic and mechanical influences can be removed. Sometimes vision improved immediately as the contents of the sinus was aspirated out.

A. Goss.

Batten, R. D.: Double Detachment of the Retina in a Boy with Albuminuria. Proc. Roy. Soc. Med. 1914, Sect. Ophth., vii, 142.

By Surg., Gynec. & Obst.

Batten reports a case of double retinal detachment in a boy with chronic nephritis. One eye was operated upon by large scleral puncture with temporary improvement of the fields.

W. G. REEDER.

Thompson, A. H.: Detachment of Retina due to a Band in the Vitreous Following the Extraction of a Piece of Steel. Proc. Roy. Soc. Med., 1914, Sect. Ophth., vii, 151. By Surg., Gynec. & Obst.

Thompson reports a case in which a piece of steel entered the eyeball, passing through the cornea and iris. It was removed by a giant magnet. A band of exudate could be traced through the vitreous marking the path of the foreign body. Thirteen months later a large detachment developed which he thinks was caused by the body dragging on the retina.

W. G. REEDER.

Savage, G. C.: Heterophorias and Their Treatment. Ophth. Rec., 1914, xxiii, 552.

By Surg., Gynec. & Obst.

After explaining that the study of muscle has been retarded on account of Helmholtz's error in regard to the poles of the eye, the nature of ocular movements, and also on account of the unscientific instruments used, the author explains at length the monocular phorometer, the poles of the eye and the binocular fields, elaborating to a great degree on the different phorias and their treatment according to his theories.

Muscle study has been retarded because of (1) Helmholtz' theory of the poles of the eye; (2) the difficulty of linking Helmholtz' theory with ocular movements; (3) unscientific instruments, binocular phorometers, and the Maddox rod are not reliable

except for measurement of cyclophoria.

The monocular phorometer stands before one eye and cannot interfere with the retinal image of the other eye. A strong displacing prism throws an image of the test object on the other retina outside the area of possible fusion. The Risley rotary prism moves only the displaced image. It is reversible as it tests the muscle adjustment of either eye, and the uncovered eye fixes the object seen by it, while the other or false object goes where

it may.

The central point of the macula is the posterior pole of the eye, and the point on the cornea cut by it is the anterior pole, whether it be the center of the cornea or not. The monocular spacial pole is on the visual axis somewhere in space, and through it pass spacial meridians each lying in the same plane with the corresponding retinal meridian, the retinal and spacial meridians having a common center. The direct point of view is at the spacial pole, and its image is on the retinal pole, hence the visual axis is a radius of retinal curvature prolonged. All lines of visual direction are radii of retinal curvature prolonged, and the spacial and retinal meridians are concentric and lie in the same plane.

In eyes of normal muscle tonicity the two spacial poles are fused together into one binocular spacial pole by the eight recti muscles, the two monocular vertical spacial meridians are fused into one binocular vertical spacial meridian by the four obliques, and the monocular spacial parallels are also fused into binocular spacial parallels. This is the means of formation of the binocular field of vision. Eyes which can create the binocular field of vision can carry the point of fixation from the direct to any other point, hence this is practically the binocular field of rotation. All objects lying within the sixth parallel are seen singly with both eyes, those outside are seen with but one eye. The binocular field of vision is 120 degrees, the binocular field of view is 180 degrees.

In the binocular field of vision rotation in the horizontal meridian should be accomplished by only the externus of one eye and the internus of the other, each receiving a discharge of neuricity from one common brain center. At the vertical meridians the point of fixation must be carried by the harmonious action of the inferior recti and the superior obliques or the superior recti and inferior obliques, each pair under the control of its own conjugate brain-center. All oblique rotations are effected by the combined action of three pairs of muscles, each pair under the control of its own brain-center. One muscle of each pair receives supplemental neuricity from its individual nervecenter belonging to the class of fusion or duction centered, and is always individual. Except in

oblique rotations, if each muscle is normal in tonicity, no fusion-center is ever called into action.

The field of binocular fusion (retinal) is kiteshaped. The horizontal meridian, 32 degrees in extent, bisects the field in each eye at the macula, and the corresponding vertical field is 6 prism This field could not exist if controlled by conjugate brain-centers, only because every individual muscle and brain center has neuricity sent it in the interest of binocular fusion. The duction power is much less than the verting power. Fusion-centers in eyes of normal tonicity are always at rest except in oblique rotations. In heterophoric conditions, whether the eyes are still or in motion, some of the centers are active, getting rest only when the eyes are closed. Without this there could be no binocular vision in these cases.

A prism or some other external object, such as a cylinder that does throw object outside of fusion field, causes one or more fusion-centers to become alert at the sacrifice of the binocular spacial pole and meridians. The muscles called into play when an object is displaced by a prism can be determined if the image is not beyond the fusion area, and if it is outside it is not to be captured,

hence there would be diplopia.

The lifting power or tonicity of any rectus muscle both in orthophoria and heterophoria can be tested by the Risley rotary prism supplemented by a stationary prism. The rotary prism causes the eye to rotate so as to force the macula to accompany the moving image. The moment the image is carried beyond the fusion field, the center refuses The Risley rotary to act, and diplopia results. prism can be used in showing orthophoria, esophoria, exophoria, hyperphoria, and cataphoria, the latter without the use of the accessory prism.

In orthophoria, errors of refraction should be corrected in all cases, whether sthenic or asthenic. The former can easily maintain binocular field for near or far, but the asthenic type, although it can control the field for far, needs exercises (floor to ceiling, etc.) to overcome the muscle fatigue for near.

Pseudo-esophoria, if caused by hyperopia, is curable by lenses. That caused by weak ciliary muscle shown only in the near, by minus spheres 0.50 to 1.00 used as exercise. Plus lenses for near when there is neither hyperopia or presbyopia will correct it. The exercise lenses are preferable to the

rest lenses.

Intrinsic esophoria is readily distinguished from the pseudo. In the low degrees of sthenic or asthenic, relief can be obtained by rhythmic exercise of the externi and strengthening them so they may balance the too strong interni. The prisms should be base out and not too strong, because of the disturbance of orientation. In the higher degrees operation is the only resort. In asthenic-low abduction power—weak externi should be shortened so that the orthophoria may be of the sthenic variety and the spacial pole be created for near and far. If tenotomy of the interni is done the distant

binocular pole is created, but the eyes cannot maintain the near pole easily. In sthenic esophoriaabduction normal or slightly subnormal-partial tenotomy of the interni should be done, and in high

degrees the externi advanced.

Pseudo-exophoria can exist only in the near and should be treated without operation. If caused by myopia, concave lenses should be used for all near work. If it occur in an emmetropic eye, candle exercises should be advised; shortening of the interni should never be done unless preceded by a long period of candle exercise.

Intrinsic exophoria is present both in the far and near; in the low grades prism exercise of the interni will cure; in the higher grades operation alone can cure, whether sthenic or asthenic. The abduction test determines the muscle to be operated on. Under 8 degrees shortening of the interni, over 10 degrees tenotomy. Prism in a position of rest for

weak interni is of no use.

Hyperphoria and cataphoria are always intrinsic. but they may be either sthenic or asthenic. Low degrees may be cured by prism exercises which are rhythmic; in high degree the treatment is tenotomy of the superior rectus which is central if no cataphoria exists; if it occurs later on, partial tenotomy of the inferior rectus should be done. The asthenic type should be corrected by shortening of the inferior rectus.

Cyclophoria is that condition of the obliques which makes the maintenance of binocular spacial meridians difficult. It is intrinsic and may exist in connection with compensating cyclotropia. In plus cyclophoria correcting cylinders will bring great relief but not cure. The weak obliques can have tonicity augmented by exercise as follows: Weak-or-cylinders 0.50 to 1.50 set in frame and revolved in arcs of distortion to exercise the obliques. The distortion is gradually increased and the rhythmic raising and lowering of the frame causes them to contract, but it should be stopped short of fatigue. Weak cylinders, axes so placed as to rest insufficient obliques, are liable to produce artificial astigmatism. Rest cylinders if given should be 0.50 and placed on the arc of distortion of the stronger oblique. Plus cylinders in natural astigmatism can be slightly revolved so as to relieve cyclophoria. The shifting to follow the rules of N. C. Steele.

When cyclophoria complicates exophoria, etc., the tenotomies or tuckings can be nasal or temporal, usually correcting the condition. Central tenotomies in all other cases, and tuckings or shortenings should be straight forward. Sydney Walker, Jr.

McLean, W.: Do the Tonometers in Use Today Record the True Intra-Ocular Tension? Ophth., Otol., & Laryngol., 1914, xx, 432. By Surg., Gynec. & Obst.

Owing to inconvenience in the clinical manipulation of the Schiötz tonometer, McLean constructed a new instrument, based upon the same underlying principle, but modified in its mechanical details. No weights are used and the readings in millimeters of mercury are made directly from the scale of the instrument. Consequently, there is no possibility of checking the accuracy of any clinical measure-

In standardizing the instrument, measurements were made upon enucleated human and pig eyes, connected to a mercury manometer. Interposed between the eye and the manometer was a "pulsator," an apparatus to simulate the arterial pulsations. The tonometer recorded exactly the pressure registered by the manometer, without any allowance for the varying rigidity of the outer coats of the eye. Tests carried out upon the Schiötz tonometer by the same methods showed a marked difference in absolute values, but an even more marked variation in each reading. Such results with an instrument of precision, as the Schiötz tonometer is, lead one to doubt seriously the accuracy of both method and H. S. GRADLE. observer.

Schweinitz, G. E. de: Ocular Decompression; a Clinical Contribution to the Subject of Corneoscleral Trephining in Glaucoma. Therap. Gaz., 1914, xxxviii, 761. By Surg., Gynec. & Obst.

De Schweinitz points out that a technically correct operation for the release of increased tension is not necessarily followed by improvement, whether it be for the release of intracranial pressure or for the lowering of increased intra-ocular tension.

He describes eighteen cases from his personal experience representing glaucoma in different types, in which the corneoscleral trephining had been performed and the results obtained. His comments on the value of trephining in these various types of the disease are in substance as follows:

Absolute glaucoma from intra-ocular hæmorrhage is not a suitable type of the disease for corneoscleral trephining. This is in accord with Col. Elliot's

observations.

In post-operative glaucoma the results are usually excellent both as regards vision and tension. In this connection Elliot assumes that there must be non-communication between the aqueous and vitreous chambers.

Glaucoma, secondary to cataract, or in association with the swelling of a cataractous lens, offers less satisfactory results from the Elliot trephining than from the usual iridectomy.

Trephining in acute glaucoma is the safest and easiest method of dealing with this complication.

The results are usually startlingly good.

In ordinary chronic glaucoma corneoscleral trephining is superior to iridectomy in that vision is usually preserved; while in the latter procedure the impairment of vision is hastened. Even widening of a very narrow field has been observed to follow the Elliot operation. Chronic glaucoma with exacerbations does not yield well to trepanation; iridectomy is to be preferred.

Pain and exacerbations of tension can be effectively controlled in absolute glaucoma by trepanation. At least, it has been found that eserine will then exercise its influence, whereas previous to the operation it had no effect whatever in alleviating the attacks. Corneoscleral trephining should be given a trial in all cases of absolute glaucoma, even with the faintest trace of light perception, before an eye is condemned to an enucleation. Staphyloma of the cornea with high tension and severe tension may be relieved by this procedure.

In conclusion de Schweinitz states that in his experience he has not observed any extensive hæmorrhage into the anterior chamber or the entrance of the scleral button therein that has not experienced either an associated or secondary late infection following trephining. Neither has he ever observed an intra-ocular hæmorrhage or detachment of the choroid, as a result of corneoscleral trephining. He has, however, observed iritis develop with marked frequency, but this can usually

be controlled with mydriatics.

In summarizing his experience with the operation, de Schweinitz is of the opinion that trepanation or corneoscleral trephining is not a better operation in acute glaucoma than a technically correct iridectomy, but he is absolutely convinced that in ordinary chronic so-called non-inflammatory glaucoma it is the procedure par excellence, even in cases where an iridectomy has failed; that it is not a safe method in glaucoma complicated by cataract; that in absolute glaucoma it is the proper operation; that it is not successful in intra-ocular hæmorrhage thrombosis of the central vein of the retina and blindness as a result of this type; and that in staphyloma and secondary glaucoma it offered some hope. De Schweinitz's chief objection to this operation was the rather common occurrence of iritis following it. He thinks that the judgment of the value of the operation should not be based simply upon its effectiveness in lowering intra-ocular tension, but most decidedly upon its ability in the preservation, restoration, and improvement of visual acuity. He urges that more accurate studies be made in regard to the relationship of plus tension of an eyeball to the health of that organ.

E. F. SLAVIK.

Ziegler, S. F.: Trefoil or Stellate Keratectomy for J. Am. M. Ass., 1914, By Surg., Gynec. & Obst. Anterior Staphyloma.

Ziegler describes a plastic operation on the cornea for the correction of anterior staphyloma by means

of three or four flaps.

Asepsis must be as complete as possible including tear sac irrigation. Under cocaine-adrenalin anæsthesia an incision is made by passing a Graefe knife through the base of the staphyloma with the edge forward and cutting out. Three or four leaf-shaped portions are then removed and the margins are approximated by silk sutures. The primary incision may be with a keratome and the portions removed by means of a punch. Iridectomy or extraction of cataractous lens may be added.

HgCl2 ointment and a cresol compress complete the dressing; 0.5 per cent formaldehyde is used E. B. FOWLER. whenever infection occurs.

Hirschmann, B.: Otitis Media and Brain Tumor (Otitis media und Hirntumor). Zischr. f. Ohrenh., 1914, lxxi, 230. By Surg., Gynec. & Obst.

The symptoms of brain abscess and brain tumor are so much alike that differential diagnosis is difficult. It is generally made on the basis of the history; if there is a source of infection that would probably cause abscess, such as otitis media, the diagnosis of abscess is made. There are cases, however, in which otitis media and brain tumor coexist, which makes the diagnosis almost impossible. Hirschmann reports two cases from the Heidelberg clinic and collects all the others from the literature; those up to 1900, 19 in number, were previously published. He gives brief abstracts of the cases since then, bringing the total number up

The general symptoms of the two conditions are much alike. In uncomplicated brain tumor there is seldom fever; it appeared in 7 of the reported cases, but was probably due to the otitis media. Some authors report fever as a constant symptom of brain abscess, but Macewen describes a series of cases in which the temperature was normal or even subnormal. There was slowing of the pulse in only three cases, probably due to the fact that otitis quickens the pulse. There was choked disc in about 50 per cent of the cases, convulsions in 11, paralysis of the eve muscles in 11. He found no symptoms that are characteristic of brain tumor and do not appear in abscess, and concludes that if there is an etiology for brain abscess a certain diagnosis of tumor cannot be made.

Recently röntgen examination has played a part in brain diagnosis. Changes in the skull can be recognized in the röntgen picture, such as wearing away of the inner surface, thickening of the skull, changes in the venous sinuses and sutures that indicate the presence of a chronic process causing rise in pressure, such as tumor or hydrocephalus. It is possible that this may be utilized in the differential diagnosis between brain tumor and abscess, although in the author's own two cases the

skull was normal.

Dougherty, D. S.: Colon Bacillus Infection in Middle Ear Disease. N. Y. M. J., 1914, c, 1163. By Surg., Gynec. & Obst.

Reports are given of twelve patients in whom aural disease was caused by the colon bacillus.

In 3 cases the colon bacillus was found in pure culture and the initial point of entrance of the infection was through the canal wall. In one case in which there was bilateral aural disease, the bacillus was in pure culture and the point of inception in one ear was also furuncular.

In one case there was primarily a chronic otitis media with slight staphylococcic infection, dormant until lighted up by the virulence of the colon bacillus which was conveyed direct from the rectal abscess.

Отто М. Котт.

Durkee, J. W.: The Prophylaxis and Treatment of Otitis Media in Infectious Diseases. Long Island M. J., 1914, viii, 470.

By Surg., Gynec. & Obst.

Concerning prophylaxis, the first step is to keep the nasopharynx as clean as possible, by the use of either an atomizer or medicine dropper. The nasal douche is condemned. When the nose is blown, both nostrils should be left open.

The next prophylactic measure is to examine the ears daily or at least every other day, and not wait until the patient cries or complains of pain.

As regards treatment, the drum should be incised at the first appearance of bulging, preferably with the patient under a general anæsthetic. After the incision, the author recommends syringing the ear every two hours, using each time a full pint of boric acid or a weak carbolic acid solution. No cotton should be worn in the canal while the ear is discharging. If mastoiditis develops an early operation is advised. Отто М. Котт.

Zimmermann, A.: Abderhalden's Dialysis in the Differential Diagnosis of Intracranial Com-plications of Ear Diseases (Die Verwendbarkeit des Dialvsier-Verfahrens nach Abderhalden in der Klinik der otogenen intrakraniellen Komplikationen). Ztschr. f. Ohrenh., 1914, lxxi, 133. By Surg., Gynec. & Obst.

Zimmermann took up the question of whether a serological differential diagnosis could be made between pathological processes in the brain itself, such as abscess and tumor, and processes outside the brain, such as meningitis, extradural abscess, sinus thrombosis, and uncomplicated ear disease.

The results of a series of clinical and experimental cases are given in tabulated form. The chief points of surgical interest in the report are that there is always a positive reaction in brain abscess, and that the result is negative in otitis or mastoiditis that

has not reached the brain.

While it is true that brain abscess always gives a positive reaction it is not true that a positive reaction always indicates brain abscess. A positive reaction tells nothing of the nature of the process affecting the brain. It may be positive in simple encephalitis and also in paralysis, epilepsy, and all forms of dementia. It is also positive after inhalation anæsthesia, so that blood for the examinations should be removed before anæsthesia is given. A negative result absolutely excludes brain abscess and probably also meningitis, for in all cases of meningitis there are probably also encephalitic processes. The negative reaction is also of value in excluding cases that have symptoms simulating cerebral involvement. A. Goss.

Lake, R.: Acute Suppuration of the Mastoid and Its Treatment. Clin. J., 1914, xliii, 705. By Surg., Gynec. & Obst.

The theme of the paper as regards treatment is that in acute mastoid disease, operation should be performed at the earliest possible moment.

This course is recommended, not only because of the possible dangers to life from the intracranial complications which might occur, but because of the damage to the hearing function from allowing the suppurative process to continue too long.

The author considers the symptoms of acute suppurative disease of the mastoid, as seen in infancy, in childhood, in the adult, in late adult life, and in old age, and also mastoid abscess without

middle ear suppuration.

As to treatment, he advises the Schwarz operation, as being by far the best that we have at our disposal, and insists that the most essential part of that operation is the enlargement of the iter ad antrum to its largest possible extent, and this should be done outward and upward, leaving the inner and

inferior wall of the passages untouched.

After the wound and middle ear have been thoroughly cleansed by the use of an efficient antiseptic solution, the author fills up the wound cavity with an iodoform emulsion made with an oily basis. The wound is then lightly plugged with gauze soaked in iodoform emulsion and closed up in the ordinary fashion. The dressing is changed about the third day and after that daily. The external meatus is washed out with 5 per cent carbolic acid every day, and after the dressing has once been taken out no further dressing need be inserted, but the wound is irrigated first with 5 per cent carbolic acid and then the cavity is filled up with the emulsion, when it is allowed to close as soon as possible.

The blood-clot dressing is condemned, because it becomes infected easily. Отто М. Котт.

Holmes, E. M.: Clinical Classification of Ethmoiditis. J. Am. M. Ass., 1914, lxiii, 2097 By Surg., Gynec. & Obst.

Although it is clinically impossible to satisfactorily classify the pathology of the ethmoid, the author divides it into two classes: the purulent, acute or chronic, and the non-purulent, which may be acute or chronic, inflammatory, degenerative, syphilitic, tuberculous, or neoplastic. Many acute cases are self-limited, and result in cure without interference, but in order to prevent a weakened resistance or a chronic termination, all cases should be carefully studied by direct endoscopic examination and radiography.

The author advocates conservative treatment in order to conserve the functions of the nose, but in those cases where it is justifiable he advises extensive exenteration. ELLEN J. PATTERSON.

Wimmer, A.: Six Operative Cases of Tumor of the Acoustic Nerve (Sex Tilfaelde af opererede Akusticustumorer). Hosp.-Tid., Kjøbenh., 1914, Ivii, 1169, 1207. By Surg., Gynec. & Obst.

Wimmer reports six operations for tumor of the acoustic nerve, the results of which were not very

encouraging.

The first patient, a woman of 35, died from infection of the wound. She had been deaf on the side of the tumor for several years before other signs of a brain lesion became apparent. No such free interval was apparent in the second case, a man of 51, who for 18 months had had headache, vertigo, vomiting, and other symptoms of brain tumor. Deafness on that side developed suddenly after a few months. He died about six hours after the removal of a large sarcoma.

In the third case there was a free interval of seven years between the initial deafness and the other symptoms of a brain tumor. Intervals of blindness on the side of the tumor was the next symptom. He died the third day after the enucleation of the

sarcoma.

The fourth patient referred all his symptoms to the effects of a stroke of lightning in 1908, which had left him paralyzed and deaf on one side, but he must have been mistaken in this, for it seems improbable that a gliosarcoma could have developed so rapidly in consequence of his having been struck by lightning. The tumor must have been growing at the time, and the lightning stroke induced hyperæmia in it and an apoplectic attack, which subsided as the extravasated blood was absorbed, leaving only the symptoms of the brain tumor. He died suddenly five hours after the operation. The fifth patient was a woman of 25, who four years before had suddenly become deaf in the right ear. During the following years disturbances in gait gradually developed and finally vision became impaired and intense pain developed suddenly in the left side of the face. The left side of the tongue felt as if she had burned it, and her speech was thick, but there was no headache, no vomiting nor psychic torpor as in some of the other cases. Other signs confirmed the diagnosis of a tumor involving the acoustic nerve and it was successfully removed. In a sixth case intervention had to be restricted to a decompressive trephining, leaving a valve opening which was of great benefit.

## SURGERY OF THE NOSE, THROAT, AND MOUTH

#### NOSE

Hurley, J. J.: Extracts and Thoughts from a Sinus Classic. Laryngoscope, 1914, xxiv, 909. By Surg., Gynec. & Obst.

It is the author's opinion if a scientific study of Hajek's classic upon the sinuses was made by American rhinologists there would be more unanimity of opinion in the treatment of sinus disease.

He presents at great length, quoting freely from Hajek, the anatomy of the lateral nasal wall, the development of the ethmoid labyrinth, and the significance and diagnosis of pus in the middle meatus.

In a case where pus is found in the middle meatus, the author makes his diagnosis by exclusion. He first cleans the middle meatus, punctures and washes out the antrum; in the presence of negative findings, he proceeds to probe and wash out the frontal sinus after resecting the anterior end of the middle turbinate; if the findings are again negative, the diagnosis of pus in the anterior ethmoid is made. ELLEN J. PATTERSON.

Gleason, E. B.: Conservative Treatment of Suppuration of the Accessory Sinuses of the Nose. Laryngoscope, 1914, xxiv, 963.

By Surg., Gynec. & Obst.

Protests against excessive radicalism in the treatment of accessory sinus disease from all parts of this country and abroad have prompted the author to urge conservative measures which tend to restore the normal functions of the inflamed sinuses, rather than radical operations which destroy the affected structures.

Acute sinusitis and, to a lesser degree, chronic sinusitis have a decided tendency to recover spontaneously provided the ostia of the injected cavities

remain patulous.

The author treats suppurative cases with pus flowing from beneath the middle turbinal by douching with normal salt solution and applying pledgets of cotton saturated in two per cent cocaine. pus is then removed by suction with a two-drachm syringe to which a cannula is attached, and four or five drops of ten per cent argyrol or other medicant is deposited between the middle turbinal and external nasal wall and in the vault of the nose. In some cases it is necessary to remove the middle turbinal, and for drainage of the frontal sinus the author uses intranasal operation with as little destruction of the anterior ethmoid cells as possible.

ELLEN J. PATTERSON.

Shambaugh, G. E.: Pathology of the Ethmoid Labyrinth. J. Am. M. Ass., 1914, lxiii, 2100. By Surg., Gynec. & Obst.

Pathological conditions of the ethmoid are recog-

nized by clinical symptoms.

In the acute catarrhal ethmoiditis, impaired ventilation and drainage due to swelling of the mucous membrane give rise to a sense of pressure and fullness between the eyes, sneezing, and a profuse discharge of mucus into the nose. In acute empyema, the profuse discharge of pus into the nose may be associated with much pain due to impaired drainage, and in cases which are unrelieved until the bony framework becomes involved the acute condition becomes chronic. Hypertrophic ethmoiditis is recognized by symptoms of an almost continuous head cold associated with sneezing and a profuse watery discharge from the nose.

The chronic atrophic form of ethmoiditis is seen in connection with a general atrophic process in the nose, and tertiary syphilis causes extensive bony ELLEN J. PATTERSON. necrosis.

Patton, W. T.: A Few Interesting Points in Regard to Bronchial Asthma; Report of a Severe Case Cured by Intranasal Surgery. Laryngoscope, 1914, xxiv, 982. By Surg., Gynec. & Obst.

The author thinks that the nose and throat are the most common source of reflex irritation in asthma and if, after a careful study of the intestinal tract, the heart, and kidneys, no trouble is located, then any abnormal or diseased condition of the nose and throat should be removed or treated.

He reports a case of a man, age 27, who had been suffering from asthma for ten years, each attack accompanied by swelling and discharge from the nose. A submucous resection, removal of the right middle turbinate, curettement of the right ethmoid, and removal of the lingual tonsil accompanied by subcutaneous and intravenous injections of phylacogen cured the asthma. ELLEN J. PATTERSON.

Carter, W. W.: Correction of Nasal Deformities by Mechanical Replacement and the Transplantation of Bone. N. Y. St. J. Med., 1914, By Surg., Gynec. & Obst. xiv, 517.

The author divides the cases of nasal deformities into two great classes: (1) cases in which there is a displacement of one or more of the segments of the nasal arch; and (2) cases in which there is an absence of one or more of these segments.

The former cases are amenable to the bridgesplint operation. The second group are suitable cases in which to employ transplantation of bone.

Instruments necessary for mechanical replacement are a bridge-splint, two intranasal splints, a chisel for intranasal use, and a pair of Adam's forceps. The first step necessary is to mobilize the entire framework of the nose by means of the chisel and forceps, after which the bridge-splint is applied. The author's claims for this method are that the form and function of the organ is restored by replacement of its own tissues into their normal positions.

The deficiency in the bony framework for which transplantation of bone is used may be due to (1) congenital defects; (2) traumatism, accidental or operative — submucous operations; (3) abscess of septum; (4) destructive diseases, such as syphilis,

lupus, and atrophic rhinitis.

The author warns against the use of strong antiseptics, because they impair the cellular activity of the bone and the receiving tissues. After the first incision only physiological salt solution is used.

The transplant is introduced through one of two points: (1) through a curved incision made between the eyebrows; or (2) through an incision made from within the nose at a point corresponding to the

lower edge of the upper lateral cartilage.

The rib is selected for the transplant and always from the patient into whose nose the bone is to be placed. This is necessary in order that the arrangement of the atoms in the molecule will be the same in both the transplant and the receiving tissues.

The use of several small pieces of bone is prefer-

able to large ones.

Further conclusions reached by the author are:

r. Bone with or without periosteum and free in the soft tissues is osteogenetic and also probably acts in an osteo-inductive capacity.

2. Bone uncovered by periosteum when connected with live periosteum-covered bone is osteoconductive and osteogenetic, the points of greatest growth being where it comes in contact with the periosteum.

- 3. A periosteum-covered transplant in contact with live periosteum-covered bone establishes a firm bony union with the latter in three weeks, and it continues to live and grow practically unaffected by the change in its environment. The author has as yet noticed no overgrowth in such transplants, and he believes their development is regulated by the physiological requirements of the part.
- 4. While the periosteum is not necessary for the preservation of the transplant, it certainly adds to its vigor and growth and contributes to the success of the operation.

  Otto M. Rott.
- Blair, E. G.: Dactylocostal (Osseous and Cartilaginous) Rhinoplasty. Surg., Gynec. & Obst., 1914, xix, 718. By Surg., Gynec. & Obst.

The author suggests the following methods for correction of deformities common to the nose:

- r. For entire absence of a nose, by primarily splitting the left ring finger anteriorly to widen it; stiffening the distal joint by excision; covering this surface with a skin-flap turned back from the right chest wall and again splitting one-half this surface and turning it over for the application of a Thiersch graft to make a septum. Incising and lifting freely the entire edge of the nasal circumference to which the finger, the nail having been removed, is anchored and sutured and maintained by a plaster cast enveloping the head, arm, and chest. Later, separating the hand from the finger, using the proximal phalanx set into the superior maxilla for projection of the nose.
- 2. For collapsed nasal covering with loss of septum; utilizing two finger-joints, the distal passed under the covering for support, the second at right angle for projection. Flaps turned down from inside the covering and up from the nasal floor apposed to the dorsal integument dissected and dropped from the finger furnish denudation and

septal formation.

3. For "saddle nose" the middle finger is made the carrier of a rib graft. A free end of cartilage is exposed and anchored into the split distal phalanx, securing vital contact. Later, the graft properly fashioned is passed into the nasal depression through a section of the septum from its covering. After the finger is separated from it, the columna and finger-end are restored.

#### THROAT

Fedde, B. A.: Retropharyngeal Abscess. Med. Rec., 1914, lxxxvi, 1009. By Surg., Gynec. & Obst.

The author reports three cases to show the unsatisfactory clinical course of this condition, even when

it is recognized early.

Cunningham is quoted to show that infections entering the mucous membrane of the posterior part of the nose or the nasopharynx may cause retropharyngeal lymphadenitis which may develop into abscess. The location of these post-pharyngeal glands are on each side between the pharynx and the rectus anticus major muscle, in front of the two upper vertebræ.

Fedde gives the following instructions to palpate this region: "Have the child seated in the mother's lap, its right side toward you. Stand beside it, your left hand flat on its left cheek, pressing the head against your side. Get the mouth open, then gently push the cheek between the jaws with your middle finger, and introduce the palpating index-finger of the right hand rapidly back, exploring the nasopharynx and oropharynx as far down as possible."

The following procedure the author describes as being most satisfactory in the treatment of this

condition.

"The attendant sits facing me and lays the child's head in my lap. At my right is a good light. The Denhard mouth-gag is introduced on the left side and opened, while the little finger hooked under the chin keeps the jaw, and with it the hyoid bone and the tongue, well forward, thus avoiding the sudden asphyxia which authorities speak of, and which undoubtedly is caused by the crowding of the hyoid structures upon the swollen pharyngeal wall. The same hand may manage a bent spoon acting as a tongue depressor, while the right introduces the bistoury, guarded to within one-half inch of the point, perforating the most prominent part of the abscess, then enlarging the incision downward. The head has up to this time been turned partly to the side. As soon as pus wells up the child is turned over completely on its face, that the pus may be freely spit out. Later, the finger is introduced and any septa present are broken up."

Отто М. Котт.

Charlton, C. C.: Retropharyngeal Abscess with Rupture, Asphyxiation, and Death Following an Acute Attack of Tonsillitis. Laryngoscope, 1914, xxiv, 985. By Surg., Gynec. & Obst.

The author reports the case of a child, eight years of age, who, two weeks after a mild attack of acute tonsillitis, retired feeling well, but upon awakening the next morning felt sick and weak. At four o'clock in the afternoon he was seized with a coughing spell and died from asphyxiation following the spontaneous rupture of a retropharyngeal abscess. The family history was negative for tuberculosis and lues.

ELLEN J. PATTERSON.

Unger, M.: New Direct-View Self-Retaining Laryngoscope. Laryngoscope, 1914, xxiv, 995.

By Surg., Gynec. & Obst.

The new instrument consists of a long narrow tongue-blade at right angles to the handle to reach from the teeth of the lower jaw to the base of the epiglottis and a long narrow palate-blade to reach from the hard palate, just back of the teeth, to the cervical vertebræ near the arytenoid cartilages. The palate-blade is fastened at its proximal end to the palate-blade-supporter which lies flat on the handle of the tongue-blade upon which it may be made to slide up and down by means of a screw arrangement along its longitudinal axis.

ELLEN J. PATTERSON.

Smith, H.: Papilloma of the Larynx. J. Am. M. Ass., 1914, lxiii, 2207. By Surg., Gynec. & Obst.

Among benign laryngeal growths, papilloma is found in from 39 to 50 per cent of all cases and is the most frequent laryngeal growth among children. Single papilloma are usually found anterior, giving rise to huskiness of the voice or hoarseness; while multiple papilloma may spring from any part of the laryngeal mucosa producing dyspnæa, cyanosis, and impaired general health.

The treatment consists not in laryngofissure, as was formerly practiced, but in removal of the growth by the direct method with fulguration of the bases, as often as the growths recur, or prolonged tracheotomy until the growths disappear sponta-

neously; in some cases local applications of radium have produced marvelous results.

ELLEN J. PATTERSON.

Yankauer, S.: An Electrode for Fulgurating the Larynx. Laryngoscope, 1914, xxiv, 993. By Surg., Gynec. & Obst.

The electrode consists of a hard rubber tube with metal lining bent to form a handle having at the distal end an opening I mm. in diameter through the rubber and metal, and a threaded hole in the handle with a piece of metal in electric connection with the metal lining at its bottom, through which the conducting cord is carried to the small hole at the distal end. To the end of the handle is attached a rubber tube, through which compressed air is delivered to blow out any ether vapor and secretion and to separate the tufts of papilloma. The rubber insulation prevents the tissues coming in contact with the conductor.

ELLEN J. PATTERSON.

Skillern, R. H.: Method of Suspension (Killian); Demonstration of the Latest Form of the Apparatus. J. Am. M. Ass., 1914, lxiii, 1923. By Surg., Gynec. & Obst.

The suspension method is indicated for the removal of intralaryngeal growths, hypertrophies, foreign bodies in the larynx and mouth of the esophagus, for diagnostic purposes, or for curettage of the larynx. The advantages in this method are that the operator seated in a comfortable position has a continuously illuminated direct view of the larynx with plenty of working room for both hands, with no danger of the blood or tissue being inspired by the patient.

The author operates in a dark room; under ether anæsthesia administered by the colonic method; with light reflected or direct; and with especial care in introducing the spatula to keep it in the median line, not to introduce too deeply or to loosen the incisor teeth.

ELLEN J. PATTERSON.

Curtis, H. H.: Indirect Intralaryngeal Method for Removal of Benign Neoplasms. J. Am. M. Ass., 1914, lxii, 1922. By Surg., Gynec. & Obst.

Papillomata and fibromata are the benign growths most frequently found in the larynx, though one may find myomata, angiomata, lipomata, cystomata, chondromata, singer's nodules, polypi, pachydermia, or sarcoma.

The instruments used for removal of laryngeal growths by the indirect method have not been improved much since 1880, and today the instruments most used are those of Fauvel and Mackenzie with modern modifications.

The technique is as follows: After cleansing the throat, the larynx is sprayed with a solution of cocaine, 4 per cent, and the uvula pillars and posterior pharyngeal wall are touched and massaged with the same solution on a cotton applicator. The patient holds the tongue with a napkin while an assistant lifts the epiglottis with an Escat epiglottis

lifter, the patient's head being steadied by a nurse. The patient is instructed to say A changing to E and then to take a deep breath with complete relaxation, and at that instant the forceps are introduced and the growth removed.

ELLEN J. PATTERSON.

Kaempfer, L. G.: Suspension Laryngoscopy in Ambulatory Patients. Am. J. Surg., 1914, xxviii, 418. By Surg., Gynec. & Obst.

The procedure of suspension laryngoscopy, introduced by Killian but little more than two years ago, is reviewed and a detailed description of the apparatus given. The advantage over the older method of direct laryngoscopy is that the instrument is steadied and held in position by the adjustable mechanism instead of by the hand of an assistant, which often requires much muscular effort and is very fatiguing, especially when operat-

ing through the speculum.

The author prefers the original type of suspension apparatus devised by Killian and has no difficulty in obtaining a good view of the larynx by this method, while he thinks the modifications of Albrecht and Killian himself serve but to complicate the procedure. In describing his technique he insists upon the importance of bringing the tongue forward when introducing the spatula behind the epiglottis, in order to avoid side displacement of the former organ. Once in position, with the head suspended, the anterior commissure is brought into view by simple manipulation of the swinging crane. This has failed in a few cases and the difficulties encountered are the same as in the direct method: short, thick neck, rigid muscles, thick tongue, and prominent teeth.

The author has made this method a routine one in the examination of patients in the out-patient department and has met few who objected to its employment a second time. Contrary to the usage of Killian, no narcotic is given, the larynx simply being well cocainized. The suspensions were undertaken, for the most part, for diagnostic purposes or for making applications, only minor surgical procedures being carried out, since the patients were all sent home directly afterward. There were no untoward results, and only occasionally a sore tongue or throat or a stiff neck. The suspension is maintained for only five or ten minutes at a time. The author believes this method has a wide field of usefulness in the treatment of ambulatory patients.

George M. Coates.

Ridpath, R. F.: Routine Use of the Bronchoscope in the Out-Patient Department. Laryngoscope, 1914, xxiv, 942. By Surg., Gynec. & Obst.

Although the technique of bronchoscopy is hard to master and requires time, patience, and constant practice, Ridpath believes that a more universal use of the bronchoscope for diagnostic and therapeutic purposes might be advantageous.

The technique is as follows: With all clothing

loose around the neck the patient sits upon a stool fifteen or eighteen inches high, having a concave back to tilt the body forward. The anæsthetic, cocaine in 20 per cent solution, is applied to the pharynx, epiglottis, and larynx in two applications, and a third application of a 10 per cent solution of cocaine is made with a Skillern tracheal applicator or through an autoscope directly to the trachea. The operator stands directly in front of the patient and using the left forefinger to protect the upper lip the bronchoscope is introduced by sight over the epiglottis, through the cords, and into the trachea and bronchi.

The author has treated in this way tracheitis, ulcerations and abrasions of the tracheal and bronchial mucosa, catarrhal hypertrophies of the mucosa, bronchial asthma, obscure hæmorrhage

and stenosis of the trachea and bronchi.

ELLEN J. PATTERSON.

### MOUTH

Graig, C. B.: Peridental Infection as a Causative Factor in Nervous Diseases. J. Am. M. Ass., 1914, lxiii, 2027. By Surg., Gynec. & Obst.

The reasons given by the author why peridental infection is not more disastrous than it is, are: (1) that the pus usually has free drainage into the mouth, (2) that the body tissues establish various degrees of immunity against a continuous bacterial intoxication. No portion of the nervous system seems to be especially susceptible to the toxin of peridental infection, but the most common manifestation seems to be paresthesia in the fingers and toes; the "pins and needles" sensation and neuritis of the large nerve-trunks has cleared up after disposing of alveolar disease. The continual swallowing and absorption of pus often leads to digestive disorders with anæmia which exhausted state is often associated with a melancholic state.

The author reports four cases:

r. A distressing palpitation with associated angina of a mild grade which disappeared after three alveolar abscesses was successfully treated.

2. Persistent periarthritis of the second joint of a right finger which continued for two years when a bucuspid tooth became tender and an abscess was diagnosed. Upon extraction of the tooth the periarthritis began to disappear and within two months there was no trace of it.

3. This patient complained of the "pins and needles" sensation in her hands and feet with a myositis of the back and calf muscles. These conditions improved under eliminative measures and disappeared after pyorrhœic teeth were extracted or cared for. In this case there was also considerable mental irritability, which cleared up after the treatment.

4. This patient presented the picture of an agitated depression; was very restless and constantly recalled her losses both financial and death, and cried during every conversation. The skiagraph

revealed two abscesses affecting the teeth which supported a bridge. A week after removal of the teeth and drainage the mental cloud began to lift and after two weeks in the country she returned completely cured.

H. A. Potts.

Gilmer, T. L., and Moody, A. M.: A Study of the Bacteriology of Alveolar Abscess and Infected Root-Canals. J. Am. M. Ass., 1914, lxiii, 2023. By Surg., Gynec. & Obst.

The impression generally entertained that alveolar abscesses, both acute and chronic, are due to the staphylococcus albus and aureus, seems from the

authors' study not to be well founded.

In gathering specimens from acute alveolar abscess the field to be incised was thoroughly washed with 50 per cent alcohol and, the incision being made, a sterile pipette was introduced deeply into the wound and filled, the pipette then being sealed

and sent to the laboratory.

In chronic abscesses those without sinuses were selected and similar precautions taken for collection. In others the pus was collected direct from the pulp-canals of teeth having no carious cavities, the teeth being cleansed with alcohol after the rubber dam had been applied; then upon drilling into the pulp-chamber the pus was collected as it welled up from the canals and sealed in the pipette. In others the pus was collected from the apices of freshly extracted teeth which had been removed under careful aseptic precautions. Specimens were also gathered from septic root-canals of teeth recently removed, the teeth being enveloped in sterile gauze and crushed in a vise.

In some canals partly gangrenous pulp was found, in others necrotic pulp tissue, and in still others, whose canals had long been imperfectly

filled, necrotic débris was found.

The series comprises 40 examinations of material taken from 16 acute alveolar abscesses, 18 subacute or chronic abscesses, and 8 teeth with diseased root-canals. This material was grown on the surface of blood-agar or ascites-dextrose-agar slants at 37° C., one tube placed under anaërobic conditions by the addition of pyrogallic acid and a few drops of sodium hydroxide to the tube after the cotton had been pushed in about one-third of the

distance from the top, the tube then being corked and sealed with paraffin. The microscopic examination of the aërobic growth revealed many graded variations of the predominating streptococcus; viz., from a hæmolytic streptococcus with a wide zone of hæmolysis in the acute abscess to a streptococcus viridans in the chronic, also one in which a streptococcus mucosus was the predominating organism, these organisms, particularly the green-producing streptococci, in many instances growing as well anaërobically as they do aërobically. Some anaërobic cultures of streptococci contained the bacillus fusiformis in varying numbers, a few tubes having the bacilli in almost pure culture.

Occasionally in the aërobic cultures isolated colonies of staphylococcus aureus or albus, micrococcus catarrhalis, and some unidentified saprophytic

organisms were found.

In three old anaërobic cultures from abscesses a black pigment-producing organism was seen; this,

however, was not held to be pathogenic.

In three chronic cases autogenous vaccines were made from both aërobic and anaërobic cultures and were administered at five-day intervals with strikingly beneficial results.

Attention is called to the occurrence of epidemic alveolar abscesses and to the reasonable supposition that they may bear a definite relationship to the same epidemic diseases of the nose and throat.

A note of warning is sounded lest the removal of teeth be by some too energetically pursued, as it is demonstrated that foci of infection about them may be as potent factors in the causation of systemic disease as are the tonsils, and some physicians are rather indiscriminate in sending their patients to extraction specialists, requiring the removal of several or all teeth when their removal is not always justifiable.

The proper interpretation of a properly made röntgenogram will decide the proper course to pursue, as some jaw abscesses may be cured by treatment through the tooth's root, others by surgical

means rather than by extraction.

Pus appearing at the free margin of the gum does not always indicate pyorrhœa alveolaris, as it may be due to lime deposits, the removal of which permits the gums to heal.

H. A. Potts.

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# SURGERY OF THE HEAD AND NECK

Head

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# INTERNATIONAL ABSTRACT OF SURGERY

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# COLLECTIVE REVIEW

# THE PARATHYROID GLANDS

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THE parathyroids were first described in 1880 by Sandstroem, who published an accurate description of their gross anatomy and histology; but no physiological significance was attached to these structures until 1891, when Gley demonstrated their relationship to tetany. From that time extensive experimental and anatomical studies have been carried on, and it has been demonstrated to the satisfaction of most authorities that the parathyroids are

specific organs.

To the surgeon the paramount interest in the parathyroids has been dependent upon the occurrence of tetany as the result of accidental removal of these bodies in operations upon the thyroid gland. However, the technique of partial thyroidectomy as now practiced is so planned as to safeguard the parathyroids; consequently tetany is a rare sequel to the operation. Yet occasionally post-operative tetany occurs, and such cases have stimulated much speculation in the direction of therapeusis. peutic problem, as well as the explanation of tetany itself, is obscured by the uncertainty which prevails as to the physiological import of the glands. Enlightenment on these features must await a better understanding of the parathyroid secretion, and it is upon the unfolding of the subtleties of this internal secretion that the broad interest in the parathyroids now centers.

ANATOMY

The parathyroid glandules (Sandstroem) or "epithelial bodies" (Kohn) are branchial cleft

derivatives. They develop from the third and fourth branchial clefts of each side as masses of compact epithelial cells. Getzowa has advanced the hypothesis that an independent third parathyroid may be developed from the fifth branchial cleft. There is no proof of the assumption advanced by Vincent and Jolly and Kishi that the parathyroids are embryonal thyroid tissue and may under certain conditions develop into the mature tissue of that gland.

The occurrence of the glands in pairs may properly be considered the typical arrangement, a superior and an inferior body being present on each side. Four glands are, therefore, the usual number, but it must be emphasized that exact enumeration in an individual case is difficult for two reasons: (1) Their small size and variable position render it an easy matter to overlook one or more of the bodies. (2) Various tissues may be mistaken for a parathyroid, especially lymph-nodes, accessory thyroids, and fat. Only microscopic examination can exclude these. In the studies of the anatomy of the parathyroids, dissections have usually been made after removal of the thyroid and adjacent soft parts, but Fischer has recently advocated dissection with the structures in situ so as to preserve the relations of the thyroid vessels. only exact method of recognizing all parathyroid tissue is by serial sections of the soft parts of the neck and mediastinum, as performed by Erdheim. Variable success has been attained by investigators in identifying the parathyroids: Berkeley found in 40 cases an average of approximately two and one-half glands; Getzowa in 100 cases found four glands in one-third of the cases; Verebely in 138 cases found four parathyroids 108 times; Yanase in 89 examinations found four parathyroids 50 times, three 23 times, two 12

times, and one 4 times.

The parathyroids are found most frequently in the following situations, which may be considered the normal arrangement, although extreme variations from these positions are frequent. The superior, the more constant in position, most often lies close to the thyroid in the middle third of its posterior border, approximately on the level of the lower border of the cricoid cartilage (Welsh), in the angle between the trachea, œsophagus, and thyroid. It lies on a plane posterior and external to the recurrent laryngeal nerve, usually in close relationship to terminal branches of the inferior thyroid artery.

The inferior ordinarily lies behind the lower third of the thyroid. It is most frequently on a plane anterior to the recurrent laryngeal nerve and in close relationship to and usually anterior to the lower branches of the inferior thyroid artery. Not infrequently, however, the inferior parathyroid lies at or below the lower pole of the

thyroid, even within the mediastinum.

The relation of the bodies to the thyroid gland is of considerable surgical importance. In most cases the parathyroids lie close to the thyroid, yet entirely external to its true capsule. Under such conditions they lie in close relationship to the surgical capsule and are usually invested by some of the fibers which constitute this fascial layer in such a way as to be held to it rather than to the thyroid when the capsule is stripped from the thyroid. Occasionally a parathyroid lies in closer relationship to the thyroid, even within a cleft, but only in rare cases is it embedded in its substance.

The blood supply of the parathyroids has been described by Halsted and Evans approximately as follows: The artery to the lower parathyroid, usually less than five millimeters in length, arises from a branch of the inferior thyroid artery. In a few instances where the inferior parathyroid gland was found below the lower margin of the thyroid, the artery, between two and three centimeters in length, coursed as a distinct, usually unbranched, vessel to the hilus of the glandule. The artery to the upper parathyroid gland is derived from one of the main branches of the inferior thyroid or from an anastomosing channel running along the posterior margin of the lateral thyroid lobe, joining the superior and inferior thyroid arteries.

After ligation of an inferior thyroid artery, the parathyroids of the same side may be supplied with blood from the superior thyroid artery, and after ligation of the superior and inferior thyroid arteries of one side, it is possible that the parathyroids of that side may be supplied through anastomoses by the vessels of the opposite side (Geis), as well as by anastomoses with pharyngeal, cesophageal, and tracheal vessels.

Nerve fibers, presumably from the sympathetic, have been demonstrated by Rhinehart in close relationship with the vessels of the parathyroids. Since he found no fibers within the parenchyma, he assumed that these were vasomotor and not

secretory nerves.

Accessory organs, that is, small supernumerary encapsulated glandules, have been found not infrequently in various positions in the neck, but especially below the thyroid, within the thymus, and even within the thyroid. Moreover, small accumulations of characteristic parathyroid cells have been noted, especially by Getzowa, in the thyroid and in the adipose tissue adjoining the thyroid.

The size of a parathyroid gland varies from about 3 mm. to 15 mm., the average being about 6 x 4 x 2 mm. (Berkeley). The bodies are usually somewhat flattened, and may be of various shapes, but especially round, oval, or reniform; in some cases there is a distinct hilus. Occasionally a parathyroid is subdivided into two distinct parts. The color is brown-red or

a reddish-yellow.

Histologically the organ consists of a mass of cells invested by a thin fibrous capsule from which irregular processes reach inward. The gland has a reticular stroma, and is as a rule strikingly vascular, presenting numerous large capillaries. Frequently fat is present, the amount being relatively great in advanced life and slight in childhood. It occurs both as an infiltration of the stroma and as a cellular metamorphosis chiefly in the principal cells (Erdheim, Fischer). The distribution of the cells varies greatly. They may form an extensive cell-mass with only occasional interruptions by vessels and fibrous strands, or they may be broken up by vessels and connective tissue so as to form clusters of lobules or netlike trabeculæ. Rarely there is an alveolar grouping of cuboidal or somewhat cylindrical cells with basal nuclei. These occasionally surround a lumen filled with colloid, the character and significance of which have given rise to much discussion. The occurrence of glycogen has been repeatedly demonstrated.

The cell grouping is rarely limited to one of the

above structural types; as a rule there is a combination of the varieties, the divergencies presented by individual glands in this respect being very wide. The cells themselves are mostly polygonal, sometimes round or cuboidal. They were subdivided by Welsh into two distinct types and this classification, in the main, has been universal-

ly accepted.

Type I. Principal cells. These are by far the more numerous. The cell-body is relatively small and is either feebly stained with basic aniline dyes, or is clear and colorless, in which case the cells present only a nucleus and membrane which takes a deep eosin stain. Some of the cells which belong to this group at times present a stained peripheral zone and a clear cytoplasm immediately around the nucleus (Getzowa, Pool). The variations in the relative width of the clear and the stained zones suggest that under certain conditions the cytoplasm of the clear cells takes on a stain which acts first near the periphery and then progressively toward the nucleus until the whole cell-body may be stained. The nucleus with open chromatin network is large, pale, often ovoid, and frequently eccentrically situated. Getzowa has designated the clear cells of this group "wasserhelle" and the stained cells "rosarote."

Type II. Oxyphile cells. These have a relatively large, finely granular body, the granules of which stain deeply with eosin. The nucleus, with closely arranged chromatin, is small and takes a deep stain. Compact masses of these cells frequently may be seen, especially immediately beneath the capsule. They are relatively more frequent in advanced life than in youth (Fischer, Getzowa, Yanase).

Petersen added a third type, the cells of which are smaller than in Type I; there is no sharp boundary to the cells, of which the granular protoplasmic body stains deeply with eosin; in places the cells are so small that nothing is seen

but a complex of deeply-stained nuclei.

Following the analogy of the salivary and other glands it has been suggested that the granular cells are a functionating and the clear cells a resting condition, but the relationship of the cell-groups to the function of the gland has not been established. A summary of the arguments which bear upon this feature is given by Guleke.

# PHYSIOLOGY OF THE PARATHYROIDS

That there is a correlation between the functions of the various glands of internal secretion is now generally believed; but in what manner and to what extent the parathyroid bodies affect and are affected by the thymus, thyroid, pituitary, adrenals, pancreas, spleen, and generative

organs is hypothetical.

The iodine content of the parathyroids is uncertain. Some (Gley, Jeandelize) claim to have found a relatively large amount; others claim that there is little or none (Estes and Cecil, Chenu and Morel). Berkeley and Beebe have isolated a nucleoproteid from the gland.

The function of the parathyroids is unknown; hypotheses as to their physiology are for the most part founded upon the relationship of the para-

thyroids to tetany.

### RELATION OF THE PARATHYROIDS TO TETANY

The occurrence of tetany after operations for goiter was first emphasized by Weiss in 1880, although reports of a few cases of undoubted tetany following goiter operations had been made prior to that time. In 1883 Kocher and Reverdin called attention to the condition since known as cachexia strumipriva, and this was shown by Kocher to be a frequent sequel to complete thyroidectomy. The two diseases, tetany and cachexia strumipriva, were regarded for a considerable time as different phases of one condition which was supposed to be dependent upon insufficiency of the obscure function of the thyroid gland.

Animal experimentation. The above clinical contributions stimulated interest in the study of the thyroid by animal experimentation. As a result Schiff, in 1884, demonstrated that after complete removal of the thyroid gland certain animals, notably cats and dogs, usually developed spastic and fibrillary contractions — tetany — followed by death. In isolated cases, where the animal survived, it was supposed that the thyroid function was carried on by aberrant or accessory thyroids. Schiff's observations were corrobo-

rated by many investigators.

The results of animal experimentation presented a perplexing inconsistency. While total thyroidectomy in dogs, cats, and carnivora in general was followed by fatal tetany; in contrast to these animals, rabbits and other herbivora regularly survived the operation with no evidence of tetany, but with the development of the slower cachexia strumipriva. The peculiar difference in the reactions of these two classes of animals to the removal of the thyroid gland was the crux which for a long time defied explanation. Its ultimate solution, however, furnished the clew which resulted in rapid advances leading up to our present knowledge of the subject. The credit for this all-important step is due to Gley,

who, in 1891, called attention to the existence in the rabbit of two small bodies—the outer parathyroids—one on each side, entirely separated from the thyroid. He demonstrated that the removal of these together with the thyroid (complete thyroidectomy) as a rule produced tetany. Gley's findings were corroborated by many; moreover, in other animals numerous investigators demonstrated that the removal of the thyroid together with the parathyroids usually resulted in fatal tetany. In cases where tetany did not develop accessory parathyroids were assumed to be present.

Kohn, in 1895, called attention to the inner parathyroids in the dog and cat and later in the rabbit. This important contribution led to the first practical step toward ascribing to the parathyroids an independent potency. Vassale and Generali, in 1896, demonstrated by striking experiments upon cats and dogs that the removal of the four parathyroids, the thyroid being preserved, quickly led to fatal tetany, while no tetany resulted from the removal of the thyroid if the

parathyroids were left.

Biedl, Erdheim, Moussu, Walbaum, and many others have removed the parathyroids and left the thyroid in various animals. These experiments are too numerous to cite. results indicate that complete removal of the parathyroid tissue results in fatal tetany. Erdheim's observations are especially convincing. After total destruction of the parathyroids in rats, with the minimum of injury to the thyroid, tetany occurred in all the cases. In these animals, by systematic serial microscopic sections of all the organs of the neck, Erdheim demonstrated the presence of the thyroid and absence of parathyroid, and thus established the fact that the lesion in every case was purely parathyreopriva. On the other hand, it must be recognized that in a certain proportion of cases in the experience of practically all experimenters tetany has not followed supposedly complete parathyroidectomy. However, the complete absence of parathyroid tissue can be verified only by serial sections, as performed by Erdheim; but on account of the great amount of labor which this entails serial sections rarely have been made.

The percentage of cases of tetany following parathyroidectomy varies considerably in the hands of different experimenters and in different animals, being particularly low in rabbits and goats and high in dogs and cats. The facility with which the organs are found and removed varies greatly in different animals. Anatomical peculiarities probably explain in large measure

the discrepancies. While in most animals there are four parathyroids, this is not an invariable rule. The positions of the bodies likewise vary in various animals, especially their relation to the thyroid; moreover, accessory parathyroid tissue in variable situations is frequently present.

It has been urged by numerous experimenters. among whom are Biedl, Walbaum, Vassale and Generali, that the intensity of tetany parathyreopriva stands roughly in inverse ratio to the number of healthy parathyroids retained by the animal. This rule, however, is certainly far from absolute, for sometimes the presence of one parathyroid is sufficient to prevent the symptoms of tetany, while in other cases two of the organs are necessary (Erdheim). The difficulty of formulating any exact deductions in regard to this phase of the subject is increased by the fact that besides frequent variations in animals of the same species there is a constant and marked variation in the reaction of different species to partial or complete parathyroidectomy in respect to the rapidity of the onset and the intensity of the symptoms. Investigations bearing upon partial parathyroidectomy have been made in various species of animals by Gley, Vassale and Generali, Pineles, Moussu, Jeandelize, Edmunds, Berkeley and Beebe, and others.

Apparently an animal can support a marked degree of parathyroid deficiency better if parathyroids are removed in several stages than in a single stage. This has been attributed to compensatory hypertrophy of the remaining parathyroid tissue, and this explanation is supported by the findings of many of the above-

named workers.

After partial removal of the epithelial bodies relative insufficiency of the parathyroid function—latent tetany—may occur. Under such conditions tetanic attacks may be precipitated in an apparently healthy animal by circumstances favorable to its development, such as pregnancy and lactation (Adler and Thaler, Erdheim, Halsted, Vassale, Schmiedlechner, and others). Guleke considers this feature important in connection with human tetany.

Experiments have been performed to determine the effect of depriving a parathyroid of its blood supply; according to Thompson and Leighton, cutting off the blood supply may produce a variable degree of cell death followed by fibrosis. Regeneration of injured parathyroid tissue by cell proliferation occurs, if at all, only to a slight extent (Erdheim, Fiori).

Certain extraneous influences affect the development of tetany. A meat diet appears to

accentuate the tetany more than a diet of milk (Blum); a cold environment is said to intensify

the manifestations of tetany.

Into the details of tetany in animals we cannot enter exhaustively. As Guleke states, it has been shown by experimental work that tetany in animals may be acute and fatal or transitory, or it may become chronic. The differences may depend upon the degree and suddenness of curtailment of parathyroid function by removal or injury, and upon the fact that certain species of animals appear prone to present a given type of tetanic manifestations; thus, tetany in a dog is usually acute and rapidly fatal, whereas in the adult rat it is markedly chronic.

The symptoms of acute tetany are chiefly fibrillary twitchings, tremors, local or general contractions (tonic or clonic), convulsions, dyspnœa, tachycardia, ptyalism, general weakness, prostration, and electrical hyperexcitability. The electrical excitability has been studied among

others by Schultze and Wilcox.

The symptoms of chronic tetany (cf. Guleke) consist chiefly in trophic disturbances of the skin, hair, and mucous membranes, cataract formation (Erdheim), inhibition of the bone growth in the young, and limitation of callus formation in adults, diminished deposit of calcium in the new-formed dentine of the incisor teeth of rats—rodents—(Erdheim), loss of weight, cachexia, and a condition of stupor. But it must be emphasized that a sharp line of demarcation cannot at present be drawn between metabolic changes which are due to deficiency of the thyroid and those due to deficiency of the para-

thyroids.

The Pathogenesis of tetany. The hypothesis has been advanced by MacCallum, Frommer, Lundborg, Vassale, Pineles, and others that the parathyroids have an antitoxic action, the suppression of which results in the tetany reaction. By this hypothesis tetany parathyreopriva would be explained as an auto-intoxication, and one, and perhaps the chief, function of the parathyroids would be the prevention of the action of certain toxic substances regularly present in the circulation. In support of the assumption that there is a circulating toxin is the fact that the disease in animals is temporarily relieved by bleeding and the injection of salt solution or blood into the veins (Joseph and Meltzer, MacCallum, von Fürth, etc.). The transmission of tetany to a healthy animal by transfusion of blood from one affected with the disease has been attempted by many investigators but with contradictory results. MacCallum carried out some ingenious

experiments in this connection: "It was demonstrated that after section of a nerve during tetany the isolated extremity remained hyperexcitable, and that such an isolated extremity became hyperexcitable if extirpation of the parathyroids was carried out after the cutting of the nerve. Then by connecting the bloodvessels of an animal in the height of tetany with those of the leg of a normal animal so that the peripheral portion of the nerves of the limb of the normal animal were bathed in tetany blood, it was demonstrated that an excitability identical with that found during tetany appears very quickly in those nerves, and as quickly gives place to the normal conditions, when the femoral vessels are reunited with their stumps so that the nerves are again supplied with normal blood. In the same way the flooding of one leg of an animal in tetany with normal blood reduces the excitability of the nerves of that leg to the normal while the rest of the animal is in tonic and clonic convulsions." MacCallum further states that after the extirpation of the parathyroid glands there appears gradually a profound change in the blood which makes it capable of acting upon the nerves in such a way as to make them respond to electrical stimuli far more rapidly than is normal. He inclines to the belief that tetany is closely dependent upon a disturbance of the calcium content of the blood. He states that direct analysis of the blood of an animal in tetany shows it to be very poor in calcium (MacCallum and Vogel). Nevertheless, Cooke and others have questioned the importance of the calcium decrease in tetany.

No constant lesions have been demonstrated in the nervous system in tetany, although much work has been done upon this phase of the subject.

# RELATION OF THE PARATHYROIDS TO TETANY IN MAN

Studies of tetany in man indicate that the pathogenic influence of the parathyroids is the same as in animals. Moreover, the clinical manifestations resulting from limitation of functionating parathyroid tissue is essentially the same in man as in animals. That tetany following goiter operations is due to the removal of the parathyroid glandules seems to have been proved not only by a long series of careful experiments upon animals, but likewise by significant findings of Erdheim, Pineles, and others in man. Nevertheless, there are some observers who are skeptical as to the truth of this assumption, and among them are competent men who have weighed carefully all sides of the question (Forsyth,

Kishi, Vincent and Jolly). They do not admit the potency of the parathyroids; they deny that the parathyroids have a function independent of the thyroid and deny that the removal of the parathyroids is the cause of tetany. The explanation of this divergence of opinion lies in the fact that besides such apparently conclusive experimental results as those described above, there have been, as previously stated, numerous other investigations, the results of which have not been uniform or positive. However, it is fair to state that almost all observers, with the exceptions mentioned, regard tetany following goiter operations as the direct result of diminution of functionating parathyroid tissue.

As proof of the influence of the parathyroids in tetany, Erdheim's studies of three cases of human tetany are remarkably significant. In each a partial thyroidectomy was performed for goiter. Unquestionable tetany developed shortly after the operation, and death followed on the one hundred thirty-first, fifth, and seventh, days. Complete serial microscopic sections of the organs of the neck showed in each case the presence of a considerable amount of well-preserved thyroid tissue; whereas in the first case none of the four usual parathyroids were found, and only two very small accessory parathyroids which lay in the isthmus; in the second case only one parathyroid was recognizable, and that was practically entirely necrotic; in the third case not one of the regular four nor even an accessory organ was found. Von Eiselsberg, in a case which developed fatal post-operative tetany, likewise proved by serial sections the absence of parathyroids.

A review of all cases of tetany which have been reported as occurring after strumectomy would prove unfruitful. Guleke estimates the number as about 160 and cites many of them. During the period when complete thyroidectomy was practiced tetany was comparatively frequent. Of particular practical interest are the reported cases of partial thyroidectomy which permit definite conclusions to be drawn as to the involvement of the parathyroids in the extirpation. Pineles compiled thirteen cases of this kind: six cases of extirpation of both lateral lobes, four cases of preservation of the upper portion of one lateral lobe, and three cases of extirpation of a lateral lobe with the isthmus. As a result he pointed out that tetany follows partial thyroidectomy most frequently in those cases where extirpation of, or injury to, the parathyroids is most likely to occur; therefore, tetany is most likely to follow those cases in which only

the isthmus or upper part of one or both lateral lobes is left. Cases by the following are cited by Guleke as demonstrating the occurrence of tetany when the isthmus only was left: Czylharz, Reichel, Schiller, Szuman, Turetta; to these may be added the second case reported by the writer. Guleke cites cases by the following in which the lower poles and isthmus were removed: Boese, Branham, Danielsen, von Eiselsberg, Geist, Kocher, Lorenz, Monnier, Oberst, Shepherd.

Tetany has occurred after comparatively slight interference with the thyroid; Iversen states that seven cases have been reported after removal of one lateral lobe of the thyroid; such cases must be explained as due to an anomalous number or distribution of the parathyroids. According to Iversen, tetany likewise has occurred in four cases where only enucleations were performed; two of

these were fatal.

Cutting off of the blood supply of the parathyroids may result in tetany. That a light tetany can develop when the four arteries are ligated is readily understood; but the fact that tetany occurs only rarely as a result of this procedure is surprising (Iversen). Although Kocher, von Eiselsberg, and others have noted tetany after ligation of all four arteries, frequently four ligations have been performed without resulting tetany. It is probable that cutting off the blood supply of a parathyroid may cause temporary loss of its function, or even permanent destruction by necrosis, yet this is apparently rare, presumably by reason of the free anastomoses. It is difficult, however, to reconcile the fact that a graft may prove viable, if a parathyroid deprived of its blood supply, but otherwise undisturbed, may undergo necrosis. It has been suggested, further, that operative trauma, the pressure of a goiter or of scar tissue may at times give rise to temporary cessation of the functional activity of the organ affected.

How many parathyroids can support health with no evidence of parathyroid deficiency cannot be positively stated. Iversen, as the result of an analysis of the cases of human tetany, inclines to the belief that two parathyroids are essential and sufficient.

Various reports have been made in regard to the frequency with which parathyroids are found in the specimens removed in operations upon the thyroid gland. Iversen states that one or two parathyroids are removed in over half of the cases of extirpation and resection. MacCallum and others have not found so large a percentage, which may fairly be assumed to be exceptionally high.

Delore and Alamartine estimate that bilateral operations have been performed upon the thyroid in 80 per cent of all cases of post-operative tetany. In a considerable number of cases, such as the two reported by the writer, tetany has followed partial or total extirpation of the second lateral lobe, the first having been removed at a former operation. In such cases it must be assumed that the parathyroids on one side were sacrificed at the first operation and that the second operation removed further parathyroid tissue or disturbed the functional activity of the remaining organs.

It follows from an analysis of the reported cases that the occurrence, intensity, and course of post-operative tetany in man are dependent upon the amount and functional usefulness of the para-

thyroid tissue that is left (Guleke).

Symptoms. The symptom-complex of tetany was first described by Steinheim in 1830 and the name "tetany" was subsequently suggested by Corvisart. Since then the same clinical picture has been repeatedly noted in association with various conditions of widely different character. The cause of its occurrence in most of these conditions is not understood; but, as a sequel to thyroid operations, tetany has been shown to depend upon deficiency of functionating parathyroid tissue, and in consequence has been designated by Erdheim "tetania parathyreopriva." Halsted suggests the terms "status parathyreoprivus" and "hypoparathyreosis" to designate the condition of the individual suffering from partial or complete loss of parathyroid tissue. The symptoms and course have been described in detail by Frankl-Hochwart.

Tetania, or tetany, parathyreopriva is characterized by certain very striking symptoms which render it practically unmistakable. The most conspicuous of these are intermittent tonic spasms of the voluntary muscles, those of the extremities being most affected. A salient feature is the exclusive involvement of the flexor groups of muscles. Intercurrent contractures of the facial muscles are relatively rare, and the muscles of the chest, back, and abdomen participate in exceptional cases only. The tetanic spasms are usually preceded by certain prodromata which persist for a variable period before the onset of the attack. These include headache, sensations of weakness or prostration, more or less rigidity of the limbs, radiating pains, and clonic twitchings. The contractions usually begin in the hands, and subsequently involve the feet; less often the feet are affected coincidentally or independently. The spasms are almost al-

ways, although not invariably, symmetrical and bilateral. As a rule, two or more of the fingers are flexed and the thumbs are forcibly adducted, sometimes tightly clasped by the contracting digits. The most characteristic contraction has been designated "accoucheur's hand" (Trousseau). In 50 per cent of the cases the wrist also becomes flexed, while flexion of the forearm with adduction of the arm to the trunk occurs infrequently. Exceptionally the fingers are held wide apart, the terminal phalanges alone being flexed. The feet, when involved, take the position of pes equinus or equinovarus, as a result of contraction of the muscles of the calf. In the contractions of tetany the affected muscles become very hard to the touch and oppose a powerful resistance to attempts at passive relaxation. Should this prove successful the tetanic attitude is at once resumed when the traction diminishes. Fibrillary twitchings are sometimes visible in the contracted muscles.

The onset of an attack is as a rule about one to three days after the operation, but this period may be less; in rare cases it may be as long as two weeks. The duration of an attack may not exceed a few minutes, or the attack may last for a number of hours; but it rarely persists as long as forty-eight hours. The termination of a tetanic spasm is frequently preceded by symptoms resembling those observed at the onset.

While there may be a free interval of days or weeks between the attacks, unfortunately this is far from being the rule. There are generally several attacks in the course of the day, the patient's rest at night being unbroken. In the severest cases one attack follows another with alarming rapidity. As a rule consciousness is retained during the attacks. In severe cases,

extreme dyspnœa may occur.

Besides the attacks of spasms there are other manifestations of the disease. Disturbances of sensation are regularly present, especially pain, which is a frequent concomitant of the spasms. Hyperæsthesia, paræsthesia, or anæsthesia may also be noted. Temporary redness and cedema are not infrequently observed over the joints. Further, the evidences of chronic tetany may develop. These consist chiefly in certain trophic disturbances, such as loss of hair, dry skin, changes in the nails, teeth, and lens, also metabolic changes resulting in cachexia. The manifestations of chronic tetany may persist for years

A certain number of cases, too numerous to be interpreted as accidental coincidences, present a combination of tetany with typical epileptic seizures (Guleke cites the cases of Ehrhardt, Hoffmann, Hochgesand, Kocher, Krönlein, Mikulicz, Westphal). These symptoms have sometimes been observed after thyroidectomy in individuals previously free from nervous symptoms, and a possible connection between epilepsy and tetany has accordingly been suggested. Certain authors also include with the symptoms of tetany the hysterical attacks which are occasionally present (cf. Frankl-Hochwart).

Trousseau assumes three distinct degrees of tetany based upon the distribution of the spasms: first, a mild form, affecting the peripheral muscles only, some of these attacks even limited to the hands; second, a moderate form, with involvement of the facial, abdominal, and trunk muscles; third, a severe form, extending to the

involuntary muscles.

Tests. Of particular significance as bearing on the diagnosis are the tests of Erb, Chvostek, Trousseau, and the leg and arm tests. These may be elicited during the free intervals, or latent periods, and likewise after the subsidence

of the attacks of muscular spasms.

Erb called attention to the fact that electric hyperexcitability of the motor nerves is regularly present in tetany. There is a marked increase of galvanic irritability, especially in the ulnar nerves. One electrode is placed over the nerve just above the internal epicondyle and the other on an indifferent point at a distance, as the infraclavicular region. In the case of the external popliteal, one electrode is placed over the nerve behind the head of the fibula and the other on the abdomen. Hyperexcitability is evidenced by contracture to abnormally mild stimuli, K C, A C, A O, and K O all being very low. most marked and significant features however are the low A O and K O contractions; a kathodal opening contraction below 5 milliamperes is particularly significant. Erb's test is undoubtedly the most sensitive, reliable, and accurate for tetany. It should always be used in a suspected

Trousseau's phnenomenon can be demonstrated in two-thirds of all cases of tetany. The symptom consists in the occurrence of a tetanic spasm in a limb as the result of compression of its main nerve-trunks. This phenomenon has been shown to depend upon stimulation of the nerves (Frankl-Hochwart and Kashida).

Chvostek called attention to the facial phenomenon which can be elicited in tetanic patients by gently tapping over the area of distribution of the facial nerve. The resulting short twitchings are known as *Chvostek's symptom*. This

test is relatively constant, sensitive, and simple, but the duration of the contraction is short and therefore may be difficult to distinguish in doubtful cases.

the leg phenomenon (Beinphänomen, Schlesinger's sign, Pool's phenomenon) contractures are caused by putting the sciatic nerve on the stretch. For this test the patient is placed in a sitting position, with legs fully extended upon the thighs, and the trunk is then forcibly flexed upon the thighs by pressure exerted between the shoulders. The contractures are preceded and accompanied by pain, which may be severe enough to cause the patient to cry out. The feet become forcibly flexed (plantar) and adducted, assuming a position of marked equino-This position cannot be altered by passive efforts however forcible. The muscles of the calf stand out conspicuously and become boardlike to the touch. The onset of the pain and contractures begins from about 40 seconds to two minutes after the position is assumed. The pain may become so severe in a short time as to make it imperative to desist. The leg test, like Trousseau's sign, is dependent upon the hyperexcitability of the motor nerves. They differ only as to the method of demonstrating this hyperexcitability. In Trousseau's test the nerve is compressed; in the leg test the nerve is stretched.

The arm test consists in putting the nerves of the brachial plexus on the stretch by elevating the arm above the head with the forearm extended — extreme abduction. The characteristic contractures of the fingers, hand, and wrist, occur with pain as in the leg test. It appears less sensitive than Trousseau's sign or the leg

test (Ferenzi, Pool, Alexander).

Hoffmann's test which depends upon hyperexcitability of the sensory nerves to electrical and mechanical stimuli appears to be of little practical importance.

In the *tongue test* (Zungenphänomen, Schultze) a slight blow upon the tongue is said to produce a contraction with the appearance of deep de-

pressions.

The course of tetany following thyroidectomy has been divided by Frankl-Hochwart into three classes: (1) cases characterized by onset soon after operation, severe course, and fatal outcome; (2) cases in which the symptoms appear soon after the operation but subside after a variable time and are followed by recovery; (3) cases in which the patients live, but present the manifestations of chronic tetany. It is necessary to extend this classification: thus, there may occur "latent tetany" with no muscular spasms but

with positive Chvostek's phenomena and other kindred signs (von Eiselsberg). Moreover, after the spasmodic attacks have ceased, recurrences may take place, especially under the influence of certain conditions which are practically the same as those with which the onset of idiopathic tetany is associated: namely, pregnancy, lactation, cold seasons, diet of meat, etc. (Guleke).

According to Guleke the prognosis of postoperative tetany is not good. From the cases which he compiled from the literature 25 per cent died and 17 per cent developed a chronic or markedly recurrent tetany. Iversen, in his compilation, found the death-rate in postoperative tetany to be about 17 per cent.

### TREATMENT OF TETANY PARATHYREOPRIVA

Much experimental work has been done on this important phase of the subject. There is, however, considerable conflict in the results reported. This is not surprising, since the course of the disease in animals is so irregular as to render it extremely difficult to estimate the effect of treatment. Even without treatment, some animals, which present profound manifestations of tetany a few hours after operation, pass after one or more such attacks into a chronic condition and live for days, in contrast to others in which the first attack proves fatal.

Attention was naturally first directed to the administration by mouth of thyroid and parathyroid glands and their products. Gley, Hoffmann, Lanz, Levy-Dorn, Vassale, Westphal, and many others have reported improvement of the symptoms of tetany in animals, likewise in man, after feeding thyroid gland or its derivatives. Most observers, however, disclaim favorable results with exclusive thyroid therapy. Löwenthal and Wiebrecht ascribed the apparent beneficial effects of thyroid feeding to the admixture of parathyroids. Pineles, however, argued that such parathyroid tissue must be in too small amount to exert a material influence.

Parathyroid preparations in various forms likewise have been tested experimentally, notably by MacCallum, Halsted, Vassale, Berkeley and Beebe, also by Biedl, Chvostek, Frankl-Hochwart, Moussu, Pepere, and Pineles. But it does not appear to have been proved that either mixed thyroid and parathyroid or even pure parathyroid feeding can control the disease in animals.

Administered to animals in subcutaneous injections, thyroid gland derivatives have proved inefficient, while parathyroid products are said to have met with some success at the hands of

Beebe and others. With the nucleoproteid Beebe claims that amelioration or disappearance of the symptoms is almost constant.

MacCallum reported benefit in parathyroidectomized dogs as the result of intravenous injections of large amounts of prepared parathyroids.

MacCallum and Voegtlin have shown that the manifestations of tetany can be quickly, though only temporarily, dissipated by injections of calcium. They have shown, further, that in both normal dogs and those with tetany injections of calcium, strontium, or magnesium, also barium, lower the excitability of the nerves. Therapeutically they consider calcium far superior to magnesium on account of the toxic effects of the latter. Strontium closely resembles calcium in effect; barium is poisonous. They state that even injections of calcium should not be made subcutaneously because of its irritating and destructive local effects upon the tissues.

In man the effects of treatment are difficult to estimate because of the impressionable character of the patients and the variable course of the disease. Some successes with thyroid feeding have been claimed, as stated above. Mac-Callum, Marinesco, Lowenthal and Wiebrecht, and many others have reported improvement following the administration of parathyroid preparations by mouth. Yet the results in animals apparently have demonstrated that in the treatment of tetany by parathyroid therapy subcutaneous administration is the means which offers the best prospect of controlling the disease. Beebe's nucleoproteid at present appears to be the most efficient product for this purpose. It has been employed with encouraging results in about fifteen cases (Beebe, personal communication). Amelioration of the symptoms after the administration of calcium lactate has been reported frequently.

Transplantation. Tissue transplantation has occupied an important part in the experimental work in connection with tetany, and its peculiar significance as a therapeutic agent in this condition warrants a brief review of the main principles of the subject.

Parenchymatous organs, in part or in entirety, seem to have been transplanted with some degree of success in a number of cases between animals of the same species, and even between human beings; but the transplantation of such tissue from an animal to man or experimentally between animals of different species has uniformly failed.

Of parenchymatous transplantations, particular attention has been directed to the thyroid

gland. The original experimental transplantations of this organ in animals were done by Schiff. and the first attempt in man was made by Kocher in 1883 in a case of cachexia strumipriva. The functional results in both instances were transient only. It was tried by Bircher and others for myxœdema, but with similar results. The first attempts which seem to have been successful in respect to the life and function of the transplanted thyroid tissue were those of von Eiselsberg and Cristiani. Payr reported striking results in animals and in man.

Many of the experimental thyroid implants apparently resulted in the prevention of tetany. Von Eiselsberg in 1802 transplanted in four cats half of the thyroid into the properitoneal tissue, and one month later removed the other half; the animals remained healthy until he removed the implanted thyroid, after which tetany developed. In the successful thyroid transplantations it may fairly be assumed that parathyroid tissue was present. Confusing results have been reported by Kocher, who noted that implantations into the bone-marrow of the tibia of small pieces of thyroid tissue in which no parathyroid tissue could be found microscopically prevented tetany after complete thyroparathyroidectomy, and that tetany developed when the implants were Thompson, Leighton and Swarts and Morel found that various bone lesions experimentally produced without an implant likewise prevented the acute evidences of tetany.

Recent experiments (cf. Stich, Makkas) appear to suggest the possibility of organ transplantation in entirety, with reëstablishment of the circulation by vessel suture, but this modification has not been sufficiently developed for practical application. The small size of the parathyroids would render it necessary to transplant

thyroid with the parathyroids.

Much experimental work has been done with exclusive parathyroid grafts by Camus, 1904, Biedl, Cristiani, Cristiani and Ferrari, Cimorini, von Eiselsberg, Enderlen, Erdheim, Halsted, Leischner, Lusena, and many others. The reported results vary to an astonishing degree, but certain features stand out conspicuously. Halsted found that in order to secure functional success with an autogenous graft, a considerable deficiency in parathyroid tissue must have been Leischner and Köhler concluded from created. their transplantations in rats that the beneficial results were due to the action of the graft during its absorption while damaged parathyroid tissue was resuming its function. Cimorini grafted all four parathyroids into the peritoneal cavity of

the same animal; acute tetany did not develop. but cachexia later occurred when the grafts became absorbed. Like other observers, he found that the peripheral parts of the grafts resist longest, the central parts necrosing early.

As to the sites most favorable for implantation opinions differ. The main situations which have been employed are the subcutaneous tissues (Cristiani); properitoneal tissue (von Eiselsberg, Halsted); peritoneal cavity (Cimorini); spleen (Payr); thyroid (Halsted); blood stream (Landois), and bone-marrow (Kocher). In determining the situation for election in a given case attention must be given to the freedom from serious danger which it offers and to its qualifications for maintaining the implanted tissue.

The tissue should be implanted aseptically into a bloodless pocket with a minimum of trauma and exposure to the air. Only a very brief interval may elapse between the excision and implantation, and during this interval the viability of the tissue is probably best retained. on the basis of the work of Christiani in connection with the thyroid, by preserving the tissue in serum from the same species of animal or in inactivated serum. Apparently Locke's solution also may be employed satisfactorily.

To sum up the experimental results, it may be said that an autoplastic parathyroid graft may be successful morphologically and functionally and possibly may even functionate permanently; that with homoplastic parathyroid grafts permanent functional results have not been proved.

In man homoplastic parathyroid implantations have been reported by Boese and Lorenz, Brown. Czerny, Danielsen, von Eiselsberg, Garré, Groves and Joll, Kocher, Morel, Pool, and Pool and Turnure. In these cases the parathyroids were taken from living individuals during the course of goiter operations, except in the cases of Brown and the first case of Pool, in which the parathyroids used for implantation were removed immediately after death.

The results in these cases were not conclusive, though in several there was a strong probability that the graft proved efficient. Even if the symptoms of tetany disappear in a small number of cases after an implantation has been made, the value of the graft is still conjectural; only its removal (functional test), which is not justifiable, can demonstrate the real effect of the transplanta-Three interpretations are possible if the symptoms subside after parathyroid transplanta-First, that the graft exerted no influence. It is possible that the tetany was destined to be self-limited and that the parathyroid implanta-

tion happened to precede by a short time the disappearance of the symptoms. Second, that the graft may have exerted a temporary effect during its absorption in tiding over a transitory tetany while the injured or devascularized parathyroids were rehabilitating themselves. Third, it is possible that the transplanted parathyroid is permanently effective as a functionating graft. Without entering into extensive considerations of tissue-transplantation, parathyroid appears to be a relatively favorable tissue for grafting. Halsted's experiments on dogs indicate that a small autograft, if a considerable deficiency in parathyroid tissue has been created, is capable of living and preventing tetany. This he proved by the functional test.

As soon as symptoms of tetany are noticed calcium lactate should be administered, followed by the parathyroid nucleoproteid as soon as feasible. The calcium must be repeated as indicated: the nucleoproteid should be given Although benefit has continuously. claimed for calcium lactate given by mouth in doses of about 30 gr. every four hours, intravenous administration appears to be much more efficient; Beebe suggests 20 ccm. of a 5 per cent solution with 100 ccm, of sodium chloride solution. In a case of gastric tetany, Kinnicutt administered intravenously 4 gm. in 1000 ccm. of salt solution. The nucleoproteid is administered subcutaneously or intramuscularly indefinitely, I ccm. of a one per cent solution being given three times a day (Beebe, personal communication).

Parathyroid implantation is indicated when medical treatment seems of no avail, or when the symptoms persist for a sufficient period to make it probable that spontaneous cure will not occur.

The method of transplantation is as follows: The parathyroid is carefully dissected out in the course of a goiter operation in an otherwise healthy young patient. The organ is immediately put into Locke's solution so as to minimize exposure to the air. The implantation is made with the least possible delay into a properitoneal bloodless pocket previously prepared beneath the rectus abdominis. It appears best to cut the parathyroid, without removing it from the solution, so as to expose two or more raw surfaces. Garré, however, advises leaving the parathyroid intact. Expedition and the minimum of manipulation and exposure to the air are essential.

In view of the uncertain status of all proposed methods of treatment, the importance of prophy-

laxis is self-evident.

Prophylaxis. In operations upon the thyroid gland, it has been shown that not merely must sufficient thyroid be left in order to prevent the occurrence of myxædema, but also that the parathyroids must be conserved so as to prevent the occurrence of tetany. Without entering deeply into the operative details of partial thyroidectomy, we will review briefly such features as bear upon the preservation of the parathyroids.

The operator must attempt to leave these bodies in situ, uninjured, and with their blood supply inviolate. Although it appears probable that two parathyroids will prevent the development of tetany, care should be exercised to avoid injuring or removing any of these bodies. Even when only one lobe of the thyroid is removed, an effort to preserve the parathyroids on that side is indicated: first, because tetany occasionally has followed unilateral extirpation, and, second, because an operation upon the second lobe may subsequently become necessary; therefore, if parathyroids have been sacrificed on the side first operated upon, a trifling curtailment of the parathyroid secretion upon the second side may

readily precipitate tetany.

When we consider how difficult it is to locate the parathyroids at autopsy on account of their small size and variable situation, it is evident that under the conditions which prevail at operation their recognition cannot be depended upon and must prove a matter of chance. In order to preserve the parathyroids in the removal of a thyroid lobe, one of two procedures should be employed. One method consists in carrying the dissection as close as possible to the true capsule of the thyroid, independent small bits of tissue being sought for, stripped from the thyroid and left uninjured. By this procedure, apparently first suggested by Chantemesse and Marie, but particularly emphasized by C. H. Mayo, the removal of the lobe is made from within the surgical capsule; that is, intracapsular, the surgical capsule being left. If small bits of tissue suggestive of parathyroids are removed, they should be implanted at once into the remaining thyroid tissue or into some other appropriate part of the operative field (Halsted, von Eiselsberg). The other method, which is even safer, consists in leaving the posterior part of the thyroid lobe in relation to which two parathyroids usually lie. The posterior part of at least one lobe always should be left. As has been emphasized, the removal of both lateral lobes in one or several operations, leaving the isthmus only, is a dangerous procedure; leaving only the upper poles is dangerous also.

In order to preserve the blood supply of the parathyroids, three methods have been advocated

and employed. First, the branches of the inferior thyroid may be clamped as they enter the gland — "ultra ligation" (Halsted). Second, the main trunk may be ligated well outside of the surgical capsule; that is, a considerable distance from the probable site of the inferior parathyroid. It is claimed for this procedure that anastomotic channels are not interrupted (Kocher, de Quervain). In these methods care should be taken to avoid including in a ligature or clamp the inferior parathyroid which frequently lies in close relation to the inferior thyroid artery. Third, the posterior part of the lobe may be left and the branches of the inferior thyroid artery secured in the cut thyroid tissue. This has been recommended as the safest procedure, (cf. Iversen), and may be employed advantageously on at least one side.

### OTHER VARIETIES OF TETANY

Attempts to ascribe the etiology of all forms of tetany and even of certain allied diseases, such as epilepsy and paralysis agitans, to an imperfect functional activity of the parathyroid glands have not been successful as a rule. Nevertheless. Pineles assumes the existence of a common etiology for all forms of tetany. He inclines to the belief that further research will trace the unopposed action of a tetanic toxin in all forms of tetany to a depressed functional state of the parathyroids. Chyostek also expresses the view that all varieties of tetany are dependent upon the parathyroid bodies. His observations of tetany, apart from that following goiter operations, led him to believe that the essential feature in the etiology is a functional disturbance of the parathyroid glands so that they are unable to adapt themselves to various changes. It is due to this susceptible condition, he and others think, that menstruation, pregnancy, infectious diseases, etc., are prone to produce the tetany reaction.

In connection with tetany of maternity there have been findings suggestive of parathyroid insufficiency. Von Eiselsberg, Neumann, and von Meinert reported cases of maternal tetany in women who had undergone partial thyroid-ectomy. Moreover, Adler and Thaler, Erdheim, Halsted, Verstraeten and Vanderlinden, and others have found in animals a tendency to develop maternal tetany after parathyroid deficiency has been artificially produced. As Iversen states, tetany is more severe in gravid than in non-gravid animals; if it has not developed immediately after the operation, it is apt to do so at the close of an ensuing pregnancy.

The tetany of childhood has been attributed by many authorities to deficiency of functionating parathyroid tissue, chiefly by reason of the fact that hæmorrhage into the parathyroid glands has been reported, among others by Erdheim, Fischer, and Yanase; others, however, have failed to find such a lesion (Jörgensen, Grosser and Betke, Auerbach, etc). Guleke reviews the subject with extensive references and concludes that there is no proof that tetany of childhood is dependent upon a pathological condition of the parathyroid bodies.

Gastric tetany and idiopathic tetany likewise have not been shown to be dependent upon the parathyroid glands; yet in a case of idiopathic tetany Garré implanted a human parathyroid with reported beneficial results. In a case of gastric tetany Kinnicutt found the parathyroid

bodies of normal structure.

The special pathology of the parathyroids may be summarized from Guleke as follows:

Atrophy of the parathyroids has been reported by various authors: Thompson in marasmus, Haberfeld in typhus, pneumonia, congenital syphilis, etc.

Hypertrophy in cases of osteomalacia has been reported by Erdheim and others. Cotoni considers it a regular occurrence in pregnancy.

Degeneration, both hyaline and amyloid, has been noted.

Hæmorrhage into the parathyroids has been reported quite often, especially in children. The fact that it has been found not infrequently in the tetany of children (cf. supra) has led to the unproved assumption that it plays a causal rôle.

Acute infections appear to influence the parathyroids little, if at all (Traina, Garnier). Acute inflammation of the parathyroids has been found rarely; on the other hand, the parathyroids are frequently affected in syphilis and tuberculosis.

Cysts of the parathyroid have been divided, according to their origin, into retention, the most common variety, degenerative, and those caused by embryological disturbances.

Tumors, "epitheliomata of the parathyroid," have been reported by Walther and Oliver and Aguerre, but Guleke and de Quervain question the parathyroid origin of these growths.

Adenomata have been reported by Erdheim, MacCallum, Petersson, von Verebely and Weich-

selbaum, and others.

"Parastruma" (Langhans), according to Guleke, constitutes the most important group of new-growths of the parathyroid. The tumors may occur in the usual situations of the normal parathyroids; that is, close to but external to the

thyroid (Berard and Alamartine), or within the thyroid (Berard and Alamartine, Benjamins, Hulst), or at a distance from the thyroid; for instance, in the mediastinum or carotid region (Fiori, Kocher, Makai, de Quervain). Microscopically the tumor is suggestive of parathyroid tissue, being composed of irregular cell-masses separated by connective-tissue septa. The cells frequently contain glycogen. Guleke estimates the reported cases as about forty. The tumor tends to invade adjacent structures, and to give rise to metastases (Kocher, Langhans).

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<sup>1</sup> The limits of this article make it impossible to present an exhaustive bibliography; the reader is referred to Guleke for more complete references on special topics.

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## ABSTRACTS OF CURRENT LITERATURE

## GENERAL SURGERY

## SURGICAL TECHNIOUE

#### ANÆSTHETICS

Siegel, P. W.: Nerve-Blocking by Paravertebral Anæsthesia (Die paravertebrale Leitungsanästhesie). Deutsche med. Wchnschr., 1914, xl, 1416. By Surg., Gynec. & Obst.

Siegel has performed 150 gynecological and obstetrical operations under what he calls a combination of paravertebral and parasacral anæsthesia. The nerves of the lumbar cord and sacrum are blocked by the injection of novocaine-suprarenin. He uses only a one-half per cent solution, which is weaker than that used by any other operator; his results are as good as with the stronger solution and the possibility of toxic effects is excluded. He precedes the anæsthetic by a mild twilight sleep.

An outline is given showing just what nerves should be blocked for the various operations. Not only gynecological but other abdominal operations may be performed under this method of anæsthesia. In 70 per cent of the cases no general anæsthetic at all had to be used, and in the others the amount used was very slight. There are no contra-indications to the method. It can be used in cases where general anæsthesia is absolutely contra-indicated. In a few cases there were slight by-effects, none of them serious. There was only one death. This was on the eleventh day from sepsis in a case of total extirpation of the uterus, and the anæsthetic could not possibly be held responsible for it.

A. Goss

## SURGERY OF THE HEAD AND NECK

#### HEAD

Byrnes, C. M.: Clinical and Experimental Studies upon the Injection of Alcohol into the Gasserian Ganglion for the Relief of Trigeminal Neuralgia. Bull. Johns Hopkins Hosp., 1915, xxvi, 1. By Surg., Gynec. & Obst.

These studies comprise the clinical experience of the author in fourteen cases treated at the Johns Hopkins Hospital, and also a series of experiments made in the Hunterian Laboratory of the Johns Hopkins Medical School, in which the effect of injections of the gasserian ganglion in lower animals was studied. The result of the author's experiments and practical use of the method may be summarized as follows:

1. In the treatment of trigeminal neuralgia, a single successful injection of alcohol into the gasserian ganglion is followed by immediate relief of pain and all the symptoms indicative of its complete physiological destruction.

2. Although a general anæsthetic is not administered, the painfulness of the injection is not unbearable or greater than that experienced in making

deep intraneural injections.

3. In experienced hands this form of treatment is without serious risk, and no fatalities have been recorded as a direct result of the injection.

4. In spite of the contentions of Alexander and Unger, injections in man by exposure of the gan-

glion appear to be unwarranted, except in rare cases, in which this slight saving of time may determine the immediate result during the exposure of the ganglion. It is conceivable that in performing the subtemporal operation for removal of the ganglion, emergencies might arise which would demand prompt closure of the incision, or prevent further approach to the ganglion. Under these conditions, if the ganglion is in view or accessible, direct injection might be practiced; otherwise the original operation for removal or avulsion of the root should be employed.

5. If deep neural injections have been unsuccessful and repeated attempts to inject the ganglion by the subcutaneous method have failed, an effort might be made to inject through the exposed foramen ovale before resorting to the subtemporal

operation for removal.

6. It has been demonstrated by fractional injection that the extent of destruction may, in a measure, be limited to that portion of the ganglion from which the affected nerve-trunk originates, and that frequently the corneal fibers can be spared.

7. From the distribution of corneal anæsthesia, following partial injections of the gasserian ganglion, it appears that the upper and lower halves of the cornea receive separate innervation.

8. In cases of bilateral trigeminal neuralgia, injection of the ganglion possesses distinct ad-

vantages over other methods of radical treatment. Since anatomical continuity is not actually destroyed and the motor nucleus is not directly affected, conditions are most favorable for recovery of motor function; while sensation would be permanently lost if the ganglion were completely destroyed. Thus, by allowing sufficient time for regeneration in the motor root, bilateral ganglionolysis might be safely practiced.

o. Clinical observations have been too recent to furnish reliable information as to the permanency of relief after ganglionic injections, and experimental studies appear to indicate that it is not probable that the ganglion can be completely destroyed by a single injection of alcohol. It is the author's opinion, however, that by repeated injections of the ganglion its complete destruction may finally be accomplished. George E. Beilby.

Kakels, M. S.: Hæmorrhage from Middle Meningeal Artery Due to Traumatism; Hemiplegia, Motor Aphasia; Osteoplastic Flap for Ligation of Vessel; Recovery. Am. J. Surg., 1915, xxix, 16. By Surg., Gynec. & Obst.

Kakels claims that fortunately the physical signs, the effects of cerebral compression, are so characteristic that they hardly admit of error. An injury to the skull sufficient to cause laceration and extravasation is generally followed by a peculiar sequence of symptoms, depending upon the situation of this extravasation. The extravasation may be either intracerebral or extracerebral; if the former, death may follow rapidly before symptoms of compression are demonstrable, due no doubt to involvement of important centers. If extracerebral, due to bleeding from the middle meningeal or its branches, the following characteristic symptoms are usually present: (1) concussion; (2) free or conscious interval; (3) focal symptoms; and (4) symptoms indicative of general pressure.

Bleeding from the veins, sinuses, perisinoidal sinuses, or emissary veins may cause extradural hæmorrhage, the symptoms depending upon the amount and site of the extravasated blood.

Stress is laid upon the importance of the free or conscious interval between the concussion and the compression stages as a characteristic symptom of middle meningeal hæmorrhage. Coma may appear

very rapidly, due to rapid extravasation.

The author recommends the use of a large osteoplastic flap with its center over the main trunk of the artery to obviate the uncertainty which often arises as to which branch has been injured. And again, with this exposure the brain can be lifted and the middle fossa of the skull exposed and the clots removed.

He cites the following very interesting case: A male, aged 45, was struck with a baseball. At first he felt dizzy, but was soon able to walk home. One hour later he became unconscious, and the whole right half of the body, including the face, was completely paralyzed. On examination a small hæma-

toma over the left frontal region was discovered, but no depression could be made out. The left pupil was dilated and there was no reaction to light or accommodation. The right upper and lower extremities were paralyzed. The knee-jerk, Babinski's sign, and ankle-clonus were present on the right side.

On the left side the knee-jerk was present, but only a slight ankle-clonus could be elicited. Lumbar puncture revealed sanguinous cerebrospinal fluid. The pulse was slow and irregular, blood-pressure 220 mm. A large horseshoe incision was made in the left temporal region down to the bone; four trephine openings were connected with a Gigli saw and the osteoplastic, flap was dislocated downward. A large clot, the size of the palm and an inch thick, was removed, a marked depression being noticed on the cerebrum when this clot was removed. The bleeding was found to be coming from the main trunk, and this was ligated. A fissure-fracture of the temporal bone was found close to the base of the skull. No subdural hæmorrhage was present; the brain was then gently lifted and a number of clots were removed from the base of the skull. The space was then gently packed with iodoform gauze to arrest the bleeding, and the osteoplastic flap was replaced and loosely sutured.

In forty-eight hours, under narcosis the old incision was laid open, the osteoplastic flap again reflected, the pack removed and a soft-rubber drain inserted and made to protrude from one of the trephine openings. The osteoplastic flap was then permanently sutured. The drain was removed on the seventh day. During the operation the blood-

pressure fell to 110 mm.

The motor aphasia and hemiplegia gradually disappeared and at the end of two weeks were hardly noticed.

The author claims that the prospects of relief from hemiplegia due to epidural hæmorrhage are in inverse relation to the time elapsing from the traumatism to the operative interference.

LEWIS B. CRAWFORD.

Csépai, K.: Diseases of the Hypophysis and Functional Diagnosis of Polyglandular Diseases (Über Hypophysenerkrankungen zugleich einige Beiträge zur funktionellen Diagnostik der polyglandulären Erkrankungen). Deutsche Arch. f. klin. Med., 1914, cxvi, 461. By Surg., Gynec. & Obst.

Csépai describes in detail three cases of acromegaly and two of dystrophia-adiposo-genitalis. In one of the cases of acromegaly there was an adenoma of the glandular part of the hypophysis, the histological structure of which corresponded to the normal structure of the hypophysis. Among the other glands of internal secretion there were marked pathological changes in the thyroid, thymus, and ovaries.

In one of the cases of dystrophia-adiposo-genitalis there was an adenoma of the anterior part of the hypophysis, which showed an active tendency to propagation, and whose structure was completely

different from that of the normal hypophysis. The direct cause of the disease was degeneration of the pedicle of the hypophysis. The thymus, the parathyroids, and the ovaries showed pathological

The cause of hypophyseal diabetes insipidus is hypofunction of the pars intermedia. shown by the fact that in one case injection of pituitrin caused a fall of 40 per cent in the daily output of urine, and also by the fact, which has not been sufficiently emphasized, that diabetes insipidus is often combined with dystrophiaadiposo-genitalis. In all of the five cases there was leucopænia, with relative mononucleosis. In one of the cases of acromegaly there was also marked eosinophilia. In the first and second cases of acromegaly the carbohydrate tolerance was very much decreased. In the other case of acromegaly and the two of dystrophia-adiposo-genitalis it was normal or increased.

The author suggests two new methods for functional diagnosis in diseases of the polyglandular system: (1) The adrenalin and pituitrin reaction of the conjunctiva. Under normal conditions three drops of a 1:1000 adrenalin solution cause a slight or moderate decrease in the conjunctival reaction that lasts for 10 to 20 minutes. If when the solution is instilled the reaction is increased, it indicates hypofunction of the chromaffin system. (2) A study of the quantitative and qualitative blood changes after adrenalin injection. Adrenalin injected subcutaneously in a normal individual causes leucocytosis with increase of neutrophiles and decrease in the number of eosinophiles and mononuclears. If there is any variation from this effect it indicates disease of the polyglandular system.

#### NECK

Payr, E.: Thyroid Transplantation (Zur Frage der Schilddrüsentransplantation). Arch. f. klin. Chir., 1914, cvi, 16. By Surg., Gynec. & Obst.

Even though the previously published reports seem to indicate that a large part, if not all, of the transplanted thyroid is absorbed, Payr thinks the procedure should not be given up, but that further work should be devoted to making it more effective. One means of so doing is to make a sharper distinction between congenital and acquired forms of hypothyroidism. The outlook in the latter is much better than in the former, for it is much easier to strengthen an impaired function than to produce a substitute for a non-existent one. Moreover a sharper distinction should be made between the various forms of idiocy in childhood; cases caused by hypothyroidism have sometimes been confused with those caused by encephalitis, porencephaly, meningitis, hydrocephalus, congenital syphilis of the brain, infantilism, and mongoloid degeneration. Naturally, nothing could be hoped from thyroid medication or transplantation in the latter class of cases.

In congenital myxœdema as well as in cretinism

there are marked changes in the brain, such as asymmetry of the hemispheres; smallness of certain lobes, especially the frontal and temporal; changes in the convolutions, or even sometimes complete absence of certain convolutions; inflammatory sclerosis of the brain substance; and dilatation of the ventricles. Of course substitution therapy, even if it improves the bodily condition, cannot make up for intellectual deficiency produced by such changes as these. The thyroid has an important influence in the development of the central nervous system. Therefore the earlier the development of the thyroid defect the greater the changes in the central nervous system, and the earlier the treatment the more completely such changes can be avoided.

Early diagnosis and treatment is of the utmost importance. A closer study should be made of the biological relations of the individuals concerned. It is better for the donor to be a member of the immediate family of the patient. Naturally a donor must be chosen who is not suffering from hypothyroidism; in fact it is probably better to choose thyrotoxic goiters for transplantation, as their excess of thyroid secretion makes them more effective than normal thyroids. As a large part of the transplant is absorbed it is better to transplant large quantities. Palpation is not sufficient to show the condition of the thyroid, so it is better to make a small exploratory incision and examine it directly. This does no harm, even to small children, and the same incision may be utilized for transplantation. Various locations have been chosen for the transplants, such as the spleen, bone-marrow, thymus, and the subcutaneous fatty tissue. The spleen offers the advantage of being very vascular and thus affording abundant nutrition; the subcutaneous tissue that of being easily accessible and not rendering a serious operation necessary.

Payr has performed seven transplantations in the past eight years and he thinks that transplantation is fully justified from the fact that it often succeeds, at least for a considerable time, where thyroid medication has been unsatisfactory. In one of his cases the effect persisted for two and one-half years, and he thinks that this shows that there was something more than the mere effect of the gradual absorption

of the thyroid tissue.

The effect of transplantation is much more powerful and much more rapid than that of thyroid medication. Probably more of the products of internal secretion can be utilized in transplantation than in simple thyroid medication. A. Goss.

Kocher, T.: Transplantation of the Thyroid (Über die Bedingungen erfolgreicher Schilddrüsentransplantation beim Menschen). Arch. f. klin. Chir., 1914, cv, 832. By Surg., Gynec. & Obst.

Kocher gives a very thorough discussion of the question of thyroid transplantation. He has transplanted the thyroid in 93 cases, in 57 of which he has has had later reports: 18 were reported as unsuccessful and 18 as successful, but they had continued under thyroid treatment; this leaves 21 successful cases with no other form of treatment.

The case histories of these 21 are given.

Transplantation is successful in cases of hypothyroidism; its chief indication is in myxœdema and cachexia strumapriva. That it has not been successful as a general rule in cretinism is explained by Kocher as being due to the fact that chemically and biologically cretins resemble some of the lower animals rather than man, and therefore, in the chemical-biological sense, transplantation of the human thyroid is heteroplastic, not homoplastic. Cretins should be given a long course of thyroid treatment before transplantation is done in order to overcome these biochemical differences.

The thyroid must be transplanted into vascular tissue, the spleen, or bone-marrow, or it may be transplanted subcutaneously; Kocher has generally transplanted it into bone-marrow. A living and active, or hyperactive, thyroid must be chosen. A part of an exophthalmic goiter is excellent, for the gland is hyperactive. One large piece or a number of small pieces may be transplanted. If the "thyroid hunger" of the patient is too great the transplanted gland will undergo degeneration; in extreme cases thyroid extract should be given to prevent this. The thyroid must be transplanted immediately after its removal, so that two skilled surgeons are required, one to remove and one to insert the thyroid. The most absolute asepsis is necessary.

In many cases there is permanent improvement in the condition, thus showing that the operation is more than a simple subcutaneous administration of thyroid extract. He does not decide whether this is due to the implant taking and functioning permanently or whether it merely stimulates remnants of the original thyroid to renewed activity.

A. Goss.

#### Beebe, S. P.: The Serum Treatment of Hyperthyroidism. J. Am. M. Ass., 1915, lxiv, 413. By Surg., Gynec. & Obst.

The function of the thyroid gland is to prepare an active substance or hormone which is essential

to the organism.

Under physiologic conditions this hormone finds its way into the circulation to meet the normal needs of the tissues. The control of this absorption is at least in part a function of the nervous system. When the gland becomes overactive its secreting cells multiply, its circulation increases, the store of reserve material is overdrawn by the circulation, and a train of symptoms known as hyperthyroidism results.

To a small degree the disease may really be regarded as a toxemia, and the source of toxin is to be found in the excess of thyroid secretion in the circulation.

The thyroidal origin of the symptoms of the disease is the basis of the serum treatment. The following observations point to the conclusion

that the thyroid gland is the source of disturbance: (1) enlargement of the gland; (2) increased blood supply in gland; (3) histologically marked evidence of an increase in the total amount of secreting epithelium; (4) symptoms of the disease can be imitated by giving to normal persons large amounts of thyroid preparation; (5) removal of the gland or diminution of its blood supply, surgically, relieves the condition; and (6) many observations show that these patients are in most cases more than usually sensitive to thyroid administrations.

The purpose of the serum treatment is to prepare in an alien species of animals a serum having special antagonistic properties to the human thyroid secretion. The injection of the serum provides the patient with a ready antagonist to the complex toxic substance in circulation. Because of the experiments of Pearce, the author reviews the method of preparation of the immune serum by injection of the nucleoprotein published in 1905. Absolute specificity under all conditions has never been demonstrated, but it is possible to make a serum which will act primarily on a given organ. In spite of many experiments with nucleoprotein serums, the original method of preparing the same has been followed, except that blood-free organs have been used and the prepared proteins have been preserved for injection by freezing rather than by chloroform or drying.

The author thinks Pearce's method destroyed the biologic character of the protein. A large percentage of animals fail to produce a highly active serum; of four sheep only one produced an active serum. The author's conclusion is that it is more difficult to form than the globulins or albumin

antibodies.

Beebe's conclusion as to evidence of specificity is based on precipitation, agglutination, absorption experiments, and on the effect of animal injections.

In the preparation of the serum, human thyroid must be used because of the biologic specificity

of the protein.

General precautions as to dose and frequency of injections are given. The dose varies with the clinical condition. As a rule the first injection is borne well without local or systemic reaction. It is best to begin with one-third ccm. and observe its reaction before increasing the dose. The best site of injection is midway between the elbow and shoulder on the anterior aspect of the arm and into the subcutaneous areolar tissue. Immediately after injection hot compresses are applied for one hour, then a 50 per cent alcohol dressing is applied. If local reaction is negative or very slight, a second injection is given the next day in the other arm, dose 7 to 8 minims. If conditions are favorable, a third injection is given on the third day, 10 to 12 minims in the first arm, followed by I ccm. every second day unless there is a reaction. the reaction is severe, it is better to wait a couple of days and then begin with a smaller dose. It is not wise to repeat injection until the previous

reaction has nearly if not entirely subsided. If this precaution is not followed, the reaction is apt to increase in intensity each time. In some instances increasing reactions begin after a number of cubic centimeter doses have been given and the condition of the arm may even resemble erysipelas. Wet dressings of ice water and lead and opium or 50 per cent alcohol afford most relief. Anaphylaxis rarely follows an injection. Accidental introduction of the serum into a vein may result in severe pain in the back, a sense of suffocation, the skin may become flushed and itch intensely, nausea and vomiting and even syncope may follow. These symptoms follow the injection directly. Let the patient lie down, loosen the clothing about the neck, apply ice towels to the head, and let him inhale aromatic spirits of ammonia. This treatment causes the reaction to quickly subside. These reactions are very unusual. The author only had two in the last three years in thousands of injections.

The serum treatment is only part of the medical treatment. Unless mildly affected, rest, freedom from mental emotions, and physical exertion are essential.

The action of the serum is not cytotoxic in the doses given. The clinical evidence is convincing that the serum is antitoxic and not cylolytic. The purpose of the serum is to relieve the toxæmia and not to cause an immediate destruction of the gland. The restoration of the gland to normal size and function is a process which often requires months to complete by mildly acting inhibition rather than by sledge-hammer blows.

In the application of serum in different types of the disease, no one factor will be of more help in treatment than early diagnosis. Many early cases are undiagnosed, as some physicians unfortunately look for exophthalmos. The author classifies the disease into six stages according to severity:

1. Early mild cases in young women 12 to 20 years of age.

2. Early typical cases in patients over 20 and under 40.

Well advanced typical cases.
 Acute toxic inoperable cases.

5. Severe advanced cases of long standing.

6. Typical cases.

In discussing serum versus surgical treatment, the author states that operation in early cases undoubtedly leads to the best results, but the same holds true precisely of the proper medical treatment, including serum treatment. Much needless surgery will result if all early hyperthyroid cases are operated on. The surgeon as a rule is unwilling to guide the patient through a somewhat prolonged course of treatment. Disregarding operative danger, it is better practice to enable the patient to recover and keep the gland than to remove it to effect the same end. As a small part of a diseased gland is restored to good condition after operation, why not restore the whole gland? As a large proportion of

hyperthyroidism is before 35 and the function of the gland decreases with age, is it not possible that many of the operated cases suffer later with hypothyroidism?

The author does not question surgery as a very valuable therapeutic measure, but is more of the opinion that operation should not be undertaken without a careful consideration of all the factors. Unless the indications are very clear the patient should have the benefit of the medical treatment. Though some surgeons do not fail to speak of the medical deaths, yet one must not forget that surgeons refuse to operate when conditions are unfavorable, but physicians cannot refuse their services just because the patient is desperately ill.

In regard to serum treatment as a preparation for surgical operation, many physicians and most surgeons feel that the surgical removal of a portion of the gland is the only safe method of treating hyperthyroidism. While operation is necessary in some cases, the patient may not be in proper condition to be operated upon. The serum treatment and management does not differ in these cases from that used in ordinary cases.

Serum treatment after operation is often very efficacious, especially if symptoms reappear after a short period of quiescence. The serum appears to be more efficacious when part of the gland is removed than when it is used to counteract the toxin of a whole gland. On the other hand, patients who have been operated on are often in a desperate condition with heart, kidney, and digestive tract complications. Such patients need a general overhauling in addition to serum administration.

The serum treatment has been used in more than 3,000 patients, 50 per cent of whom have been cured in the sense that they are strong and able to meet all the demands made upon them. They are normal in weight, have a normal heart, have no tremor, are not nervous, have no gastro-intestinal disturbances, and perform all their accustomed tasks without undue fatigue. In some cases the goiter, although much reduced in size, is still enlarged, and in others exophthalmos persists to a noticeable degree. A large portion of the 50 per cent show no evidence of the disease and are apparently normal persons. None of the cardinal or secondary symptoms can be discovered. Thirty show a very marked improvement, to such a degree that they meet all the usual demands of life without undue reaction, and under unusual physical or emotional strain they react more than normal persons The two symptoms most evident in these persons are that their glands are larger than normal and in many cases there is mild exophthalmos. Some of the thirty improved to the point permitting them to be called well. The remaining 20 per cent include the not markedly benefited, those who have been operated on, those not at all benefited, and those that proved fatal. The percentage of fatal cases in those who had the serum treatment for six months is very small. T. O. BOYD.

Kocher, A.: Basedow's Disease and the Thymus (Über Basedow'sche Krankheit und Thymus). Arch. f. klin. Chir., 1914, cv, 924. By Surg., Gynec. & Obst.

Kocher finds that in Basedow's disease there is always hyperplasia of the thyroid, but that there is hyperplasia of the thymus in only about 45 to 50 per cent of the cases. Hyperplasia of the thymus is much more frequent in young patients with Basedow's disease than in older cases. The age when hyperplasia of the thymus is most frequent does not coincide with that when disease of the thyroid is most frequent. In most of the cases the hyperplasia of the thymus is only moderate in degree. There may be as great an increase in the size of the thymus without Basedow's disease.

Histologically there is no difference between juvenile hyperplasia of the thymus and that of Basedow's disease. Hyperplasia of the thymus is more frequent in certain regions and in certain families. In most cases the hyperplasia of the thymus existed before the Basedow's disease developed, and so could not be the direct cause of the latter condition; it is apt to increase after the development of the Basedow's disease. The cause may

be a hypoplasia of the adrenal cortex.

If cases of Basedow with hyperplasia of the thymus are treated by simple extirpation or partial extirpation of the thyroid, the thymus generally retrogrades. The thyroid operation is not any more dangerous in these cases than in those in which there is no change in the thymus. Treatment with thymus preparations and röntgen rays may be given before the thyroid operation, but as the results are only transitory this treatment should be given shortly before the operation.

Asch, R.: Lingual Goiter, with a Discussion of Myxœdema and Post-Operative Tetany (Die Zungenstruma, gleichzeitig ein kasuistischer Beitrag zum Myxödem und zur Frage der postoperativen Tetanie). Deutsche Ztschr. f. Chir., 1914, CXXX, 593. By Surg., Gynec. & Obst.

Asch removed a small tumor from the base of the tongue of a healthy woman of 28, who had first noticed it two weeks before. It caused no disturbance except some interference with breathing as she lay in bed. What seemed to be the thyroid gland could be palpated deep in the neck, so no danger was anticipated from the removal of this tumor, even if it proved to be an accessory thyroid gland. The microscope showed that it was made up of both thyroid and parathyroid tissue.

The patient felt well for two weeks and then developed post-operative tetany and myxœdema in a pronounced form, and by the end of six months she presented typical cachexia thyreopriva and parathyreopriva. She failed to take the thyroid treatment that had been advised, but the disturbances gradually subsided spontaneously. At present, four years since the operation, there are no symptoms except a slight myxœdematous condition.

The literature on lingual goiter is reviewed with a bibliography of 133 titles. Among the 95 cases on record are 35 in which signs of thyroid insufficiency had been noticed before the operation (21) or autopsy (14). Only 12 per cent of the total cases were in males.

These tumors are always on the median line of the tongue. In one case iodine treatment caused the tumor to increase in size, while the general health suffered. Palpation of the thyroid region is not always very reliable, and in Asch's case had probably given misleading findings. In 9 per cent of the total 95 cases myxœdema followed removal of the lingual goiter. In case of doubt it is better not to remove the whole tumor. In 4 cases another operation was required later; in a few other cases the tumor returned but subsided spontaneously

Kienböck, R.: Stimulating Effect of Röntgen Treatment in Goiter and Basedow's Disease Über Reizwirkung bei Röntgenbehandlung von Struma und Basedow'sche Krankheit). Fortschr. a. d. Geb. d. Röntgenstr., 1915, xxii, 501. By Surg., Gynec. & Obst.

After radiotherapy of simple goiter, patients often have more or less severe general or local symptoms. Kienböck thinks these are due to an initial stimulating effect of the röntgen rays on the parenchyma of the gland. This causes hyperæmia and swelling of the organ, increase of cell activity, and general symptoms of thyroidism. This is generally only an initial stage of stimulation which is soon followed by degenerative processes. The symptoms of thyroidism persist only in very exceptional cases; one such case is described. Kienbock thinks it probable that in this case there was a focus predisposed to Basedow's disease somewhere in the body, either in another ductless gland or in the nervous system, so that the stimulation of the thyroid and increase of its internal secretion sufficed to provoke the disease. It is well known that several organs are involved in the production of Basedow's disease.

All goiters should be treated with röntgen rays. even large cervical and substernal ones, especially if there is strider and difficulty in breathing. Treatment should be cautious at first - small doses and irradiation of individual lobes on different days in order to avoid severe symptoms of thyroidism. After a few weeks this danger is passed and a more energetic method should be used. Röntgen treatment is also indicated in all recurrences after strumectomy.

Cases of permanent Basedow's disease after röntgen treatment are so rare as not to furnish a

contra-indication for the treatment.

In Basedow's disease, also, the symptoms are at first increased by röntgen treatment. The treatment should be begun carefully, the individual regions of the neck being irradiated at intervals of two days, and the dose should be much less than the maximum. One or two weeks should elapse before

the next irradiation is given.

Kienböck concludes that röntgen therapy should be given in all cases of Basedow's disease, even those that are so severe as to demand operation eventually. The preliminary röntgen treatment improves the general condition of the patient and therefore makes the prognosis better on operation. Nagelschmidt expresses the same opinion. Cases of recurrences should be given röntgen treatment.

A. Goss.

## SURGERY OF THE CHEST

#### CHEST WALL AND BREAST

Poynton, F. J., and Davies, H. M.: Cleido-Cranio-Dysostosis in Which the Removal of the Outer Part of the Imperfect Right Clavicle Relieved Severe Symptoms from Pressure on the Brachial Plexus. Proc. Roy. Soc. Med., 1914, viii, Sect. Dis. Child., 21. By Surg., Gynec. & Obst.

The authors report the case of a girl, aged 20 years, whose work as a dressmaker had been interfered with by severe shooting pains down the inner side of the arm and over the front of the chest. There was marked loss of power in the right hand and much circulatory disturbance. When the shoulder was depressed the right pulse was diminished in volume, a sign which assisted in the exclusion of syringomyelia, a condition which has been described in association with this form of dysostosis.

The outer fragment of the clavicle was removed, and when the patient left the hospital there was already improvement. She has been completely free of the severe neuralgic pains, her hand has recovered power, and she has resumed her occupation. The only complaint now is a dull ache in both shoulders, brought on by the long hours during which she sits at her work in a position that tends to make the shoulders "over-stoop." This is relieved by sitting up with the shoulders braced back, and is of an entirely different nature from the former trouble, which was caused by the inner end of the outer fragment of the right clavicle pressing back on the nerves.

Wolff, M., and Ehrlich: Artificial Pneumothorax (Über künstliche Pneumothorax). Fortschr. a. d. Geb. d. Röntgenstr., 1915, xxii, 518.

By Surg., Gynec. & Obst.

Since July, 1912, Wolff and Ehrlich have performed pneumothorax in 44 cases, in 12 by Brauer's incision method and in 32 by Forlanini's puncture method. They are inclined to think that the latter is preferable. They operate with a low intrapleural pressure, not more than 1, 3, or 5 mm. mercury; in a few cases only it was as high as 10 to 15 mm. Such high pressure was used only in cases where adhesions had to be freed. The initial dose of nitrogen was generally 800 to 1,000 ccm., for the purpose of producing rapid atelectasis of the lung and loosening adhesions. They never had symptoms due to pressure on the heart and mediastinum with these doses. The later doses were 400 to 300 ccm. and less. They sometimes gave total amounts as high as 23,000 ccm., when, of course, more or less

absorption of nitrogen had taken place between the treatments. The intervals between injections were at first 2 to 4 days and later as long as 28 days.

The average time for the entire treatment was a year. It is better to maintain pneumothorax too long than to give it up too soon. The authors do not think it is justifiable to discharge patients after

4 to 5 months.

In general, the indications are as given by the older authors; i.e., in severe, chronic unilateral tuberculosis. But it is seldom that the opposite lung is absolutely free from tuberculous foci. If these are small and quiescent, pneumothorax is not contra-indicated. The effects are not very favorable in cases with cavities. It is contra-indicated if such pronounced adhesions are present as to make extensive pneumothorax impossible. This, however, can generally be determined only by trying. It is very important to keep the patients under röntgen observation to determine the effects of insufflation, the degree of retraction of the lung, and the degree of displacement of the heart and medisatinum.

Histories of a number of the authors' cases are given. Of the 45 cases, 4 were clinically cured, 9 greatly improved, 3 considerably improved, 5 withdrew from treatment. In 6 cases successful pneumothorax was impossible on account of adhesions, 6

grew worse, and 11 died.

They do not agree with those enthusiastic authors who believe that pneumothorax is indicated in the great majority of cases of pulmonary tuberculosis, but they think the method is justified, as they attained improvement or even cure in a number of severe cases that would have been hopeless by other methods. The method has thus far been used only in very severe cases. As the operation is slight, they believe it should be extended to more recent cases, in which it will give better results. A. Goss.

#### PHARYNX AND ŒSOPHAGUS

Chamberlin, W. B.: Removal of an Open Safety Pin from the Œsophagus Under Suspension. Laryngoscope, 1915, xxv, 18.

By Surg., Gynec. & Obst.

The author reports a case of a baby, aged II months, with an open safety pin, point up, at the upper end of the esophagus. Under general anæsthesia with the child in suspension, the pin was removed by grasping the head with a forceps in the left hand and rotating the pin by means of a

second forceps in the right hand, thus demonstrating the advantage of having both hands free for manipulation.

ELLEN J. PATTERSON.

Moore, J. L. I.: Epithelioma of the Esophagus. Proc. Roy. Soc. Med., 1914, viii, Laryngol. Sect., 8. By Surg., Gynec. & Obst.

This patient, a male, aged 59, was shown to illustrate the benefits of Hill's feeding tube. The patient had had dysphagia for two months and when

first seen on September 18th had lost 37 pounds in weight. Solid or semisolid food swallowed was soon vomited. He could only retain liquid food. There was a large secretion of mucus day and night, of which he vomited a cupful at a time. At the time of writing the tube had remained in situ for seven weeks and food was retained. He could swallow liquids without discomfort. He was relieved of the mucous secretion, and his general condition was much improved.

Otto M. Rott.

## SURGERY OF THE ABDOMEN

#### ABDOMINAL WALL AND PERITONEUM

Mantelli, C.: Results of Plastic Repair of Inguinal Hernias with the Sartorius Muscle (Esiti lontani della plastica col sartorio nella cura di certe ernie inguinali). Gazz. d. osp. e d. clin., Milano, 1914, xxxv, 2023.

By Surg., Gynec. & Obst.

The author calls attention to this most excellent method of repair in recurring hernias, published by him in 1910, and now reports the results obtained. He has employed this method, especially in hernias that had recurred after operations, with the several well-known methods, and has had not a single recurrence.

The method of operation is as follows: An incision is made over the inguinal canal in the usual manner. This is slightly extended to the anterior superior spine of the ileum, and at the acute angle of the inguinal canal the incision is carried down over the course of the sartorius muscle for about sixteen centimeters. The sartorius is completely divided at its middle third, leaving intact its posterior aponeurotic sheath. It is turned thus into the inguinal canal and stitched to the outer border of the rectus abdominis muscle and to the crural arch, the sutures including Poupart's ligament.

V. A. LAPENTA.

Davis, J. D. S.: Diaphragmatic Hernia; Report of Five Cases. Tr. South. Surg. & Gynec. Ass., Asheville, 1914, Dec. By Surg., Gynec. & Obst.

Davis reports five cases of traumatic diaphragmatic hernia. The first was seen four days after an injury. The patient, a fireman, strained himself while holding a hose up on a ladder. He felt faint and was lowered to the ground and sent to the St. Vincent Hospital, where the author saw him four days later. The patient was in great agony. The left chest was dull, the heart displaced to the right, and the abdomen rigid. He could retain nothing on his stomach and died an hour later. Postmortem revealed a rent in the diaphragm, the entire stomach and part of the transverse colon being in the pleural cavity.

The second case was seen by the author at Cunningham's Private Hospital in Ensley. He was a large man, who had been stabbed in the left side

between the eighth and ninth ribs through the costodiaphragmatic sinus. A section of omentum was protruding from the chest wound. Under ether the wound was enlarged and the eighth rib cut in two places about four inches apart, so that the flap could be elevated. The transverse colon and omentum had protruded through a two-inch incision in the diaphragm. The colon and omentum were replaced and the diaphragm closed with interrupted silk sutures. The chest was closed with interrupted wormgut sutures and a cigarette drain inserted. For fear all the abdominal organs had not escaped injury, the patient was turned on his back and the abdomen opened through the right rectus muscle. A little blood was removed with moist gauze sponges. No injury to the abdominal viscera was found, and the abdominal wound was closed in layers with catgut sutures. The patient

made a good recovery.

The third case was a negro weighing about 180 pounds, who had been stabbed in the left side and thrown off of a moving car. He was received at the Hillman Hospital in a state of slight shock with dullness over the left thorax to the fifth rib. The

stab was between the eighth and ninth ribs. The man was given ether and the wound was enlarged for six inches; through the opening the eighth rib was cut at two points six inches apart, and the flap and a part of the stomach lifted; the transverse colon and omentum were found protruding through the diaphragmatic incision, which was about four times as large as the skin wound. The stomach, which had been cut, slipped back into the abdomen before it could be sutured. The transverse colon and omentum were replaced and the diaphragm closed with interrupted No. 2 catgut sutures. small cigarette drain was placed in the chest which was closed with through-and-through wormgut sutures. The patient was then turned on his back and the abdomen opened through the right rectus muscle above the umbilicus. The wound in the stomach was sutured with a double row of continuous Lembert silk sutures, and the small amount of blood present was mopped out. The abdomen was then closed with tier catgut sutures, a cigarette

drain being placed in the lower end of the incision. Drainage was removed from the abdomen on the second day and from the thorax on the fourth day.

The patient made a good recovery.

The fourth case was received at the Davis Infirmary, with the history of having been cut in the left chest and in the right side of the abdomen during a fight. After receiving the cuts, the man continued to fight until he fell exhausted. He was taken to the infirmary two hours later and placed on the operating table. A wound was found in left chest between the seventh and eighth ribs near the posterior axillary line and a stab wound in the abdomen just above the umbilicus on the right side. An incision was made through the seventh for exploration, and the intercostal space stomach was found in the pleural cavity. The incision was increased to about six inches, and the seventh and eighth ribs were cut in front and behind. Retraction of the wound gave a good view of the stomach, which was carefully examined and re-placed. The incision in the diaphragm about two inches long was closed with No. 2 catgut sutures. The chest was closed with interrupted wormgut sutures without drainage. The patient was then turned on his back and the abdomen opened through the right rectus, extending two inches above and one inch below the umbilicus. A cut was found in the transverse colon and a little blood in the abdomen. The cut in the transverse colon was closed with a double row of continuous Lembert silk sutures and the blood mopped out with moist gauze sponges. The abdomen was closed with tier catgut sutures. The patient did well until the sixth day, when he had a chill and his temperature ran up to 104°, pulse 120. A suture was cut in the posterior portion of the chest wound and a pair of forceps introduced and opened, when a lot of bloody serum flowed out. A small rubber drainage tube was introduced and left for a week. The fever continued for five days, when it disappeared and the patient recovered.

The fifth case was a male of medium size who entered the Hillman Hospital December 9, 1914, with two cuts in the chest. One stab was received to the left of the nipple between the fifth and sixth ribs and another through the eighth rib on a line with the inferior angle of the scapula. Through the second wound a portion of omentum was protruding. One of the internes, after cleansing the chest with iodine, tied off the omentum and reduced it, mopped the wound with iodine, then packed the wound with iodoform gauze and covered both wounds with sterile dressing. Three days later the patient was prepared for operation for the author's clinic. He was placed on his right side and under ether the eighth rib was resected, making a flap with the base above according to Cranwell's method. The diaphragm had been opened two and one-half inches, through which incision a large portion of omentum and a section of colon had protruded. The omentum and the colon were reduced and the opening in the diaphragm was closed with No. 2 catgut sutures. A small cigarette drain was placed in the lower angle of the wound, and the chest closed with

buried catgut sutures, except the skin, which was closed with interrupted wormgut sutures. Had the patient been operated on the first day he arrived in the hospital, the abdomen would have been opened as a precaution for possible visceral injury. But three days later he had no evidence of abdominal injury; the abdomen was relaxed. He had been eating a regular diet, and so it was concluded that he had sustained no injury to any of the abdominal viscera. On December 21, 1914, the patient was up and around the hospital. Recovery seemed certain. When an operation is decided upon, the question arises as to which is the best route to follow. If the abdominal route is selected, it is not at all easy to reach the wounded diaphragm. Prolonged and difficult maneuvers are required to bring the wound into view; if it should be found necessary to enlarge the opening, the task will prove difficult of accomplishment by way of the abdomen, and it will be found exceedingly difficult by this route to apply sutures to the diaphragm.

The thoracic route presents great advantages. It has one decided merit in injuries of the chest; viz., that the external wound itself serves as a guide. The chest is to be opened at the site of this wound and the course of the wound followed. Further, this is the most direct route; it affords space for reducing the hernia, if one is found to exist, and for enlarging the diaphragmatic wound and treating the hernia. There are two objections to thoracotomy. The first is danger of pneumothorax. The second objection is that the route does not permit exploration of the peritoneum and its contents, This objection is valid in regard to those cases in which it is necessary to repair injuries and remove intestinal contents and blood from the peritoneal cavity. In the cases in which it is important to ascertain what viscera, if any, has been wounded

an abdominal section is necessary.

No hard and fast rules are to be made for surgical procedures; each case should be approached according to its individual features; but from observations of the author the superiority of the transpleural route in the treatment of thoracicoabdominal wounds seems to be indisputably established. A regular technique is difficult to establish because of the great variations of the wound. The author recommends, as a rule, Cranwell's trap-door opening with the base above. He believes, however, that resection of one rib is often sufficient and that the incision seldom needs to extend above the eighth rib in front or the seventh behind.

#### GASTRO-INTESTINAL TRACT

Ehrenreich, M.: Diagnosis of Secretory Insufficiency of the Stomach in Its Early Stages
(Zur Diagnose der beginnenden sekretorischen Insuffizienz des Magens). Berl. klin. Wchnschr., 1914, li, 1546. By Surg., Gynec. & Obst.

There has been a great deal of discussion as to the presence or absence of free hydrochloric acid in the stomach contents in carcinoma of the stomach. However, the real question at issue is not the presence or absence of acid, but the condition of the secretory function of the stomach. Carcinoma inhibits the secretory activity of the stomach, while in benign conditions, such as ulcer, this activity is rather increased. The absence of acid ocurs only at a late stage, while to be effective the differential diagnosis must be made at an early stage.

As a method of making this diagnosis of secretory insufficiency early, Ehrenreich suggests that the acidity of the residue in the fasting stomach be determined and compared with the acidity after a test breakfast. In ulcer the acidity is as high or higher in the breakfast as in the residue, while the opposite is true in cancer. When a test breakfast is given on a stomach from which the residue has just been removed, the stomach has already been stimulated by the residue and is tired; if there is any decrease in function, as there is in carcinoma, it will manifest itself under such conditions and the acidity of the breakfast will be lowered; the opposite will be true in ulcer where there is a tendency to oversecretion.

Tables are given showing the comparative values in the two conditions noted. Operation in several cases confirmed the findings shown in the tables. The amount of the residue influences the results, and they have been found most accurate where the amount of the residue was practically the same as that of the breakfast.

A. Goss.

Alberts, G.: Operative Treatment of Acute Hæmorrhage of the Stomach (Ein Beitrag zur operativen Behandlung der akuten Magenblutungen). Deutsche Ztschr. f. Chir., 1914, cxxx, 398.

By Surg., Gynec. & Obst.

In 1887 Mikulicz first proposed operation for acute hæmorrhage of the stomach, and as excision of the ulcer was impossible, he cauterized the floor of the ulcer. Since then various methods of operation for this condition have been tried, not always with very great success. Alberts reports six cases in which he operated by ligating the arteries of the greater and lesser curvatures; in some cases this was combined with gastro-enterostomy to relieve the stomach. Two of the patients, who were in a very grave condition from loss of blood before the operation, died. One had a recurrence of hæmorrhage afterward. The results were good in the other three cases.

It has been shown by animal experiments that there is no danger of necrosis of the part of the stomach from which the blood supply is cut off. As most patients have bled severely before operation the whole mortality should not be attributed to the operation. Chronic hæmorrhage may be arrested by gastro-enterostomy; jejunostomy is also sometimes performed. Both of these operations are easy to perform, but neither guarantees hæmostasis. Ligation combined with jejunostomy is best for

threatening acute cases, and if it were performed earlier the mortality would be less.

A. Goss.

Doolin, W.: Experiments in the Transplantation of Gastric Mucous Membrane. Surg., Gynec. & Obst., 1915, xx, 53. By Surg., Gynec. & Obst.

The author has carried out various experiments in confirmation and extension of Axhausen's researches upon this subject. Axhausen has shown that autoplastic transplantation within the abdominal cavity produces cyst-formation, the cyst wall being lined with cutical epithelium. Doolin has succeeded in demonstrating that this cyst lining has its definite origin in certain epithelial islets which have survived the general necrosis of the transplanted material; the survival of these islets is due to early adherence of the omentum around the site of implantation, the blood-vessels of the omentum carrying the requisite nutrition. The size of the cyst formed varies directly with the length of time which has elapsed since the operation.

Other surroundings, such as the soft subcutaneous tissues, proved not to have the same powers of nutrition as the omentum for the sensitive mucosal grafts, and in a series of experiments undertaken to test the feasibility of forming tubular grafts the mucosa did not servive. In conclusion, the author states his belief that tubular grafts of hollow abdominal mucosal tissue, such as Lexer's implantation of an appendix for stricture of the urethra, depend for their success upon the maintenance of their lumen by the muscularis, with a later lining of the canal with epithelium pouring in from the surroundings.

Carman, R. D.: Some Elementary Features of the X-Ray Diagnosis of Gastric Carcinoma, Gastric and Duodenal Ulcer. Canad. M. Ass. J., 1915, v, 16. By Surg., Gynec. & Obst.

Carman observes that the radiologic manifestations of gastro-intestinal pathology have various and fluctuating values; some are pathognomonic, others strongly indicative, and still others merely suggestive. Three varieties of stomach are encountered: the normal, the reflex, and the pathologic. Distinction of the pathologic from the normal is not very difficult but distinction of the pathologic from the reflex is often troublesome. The author's technique is a combined fluoroscopic and skiagraphic examination with a double opaque meal, the first meal being given six hours in advance of the examination to determine the gastric motility.

The abnormal stomach manifests itself by alterations of form, contour, motility, peristalsis, mobility, tone, and position. The chief sign of gastric cancer is the filling defect, a permanent irregularity of contour which must be differentiated from deformity caused by a gas-filled colon, extrinsic tumor, or spasm. Other signs of cancer are the gaping pylorus of non-obstructive cases, stenosis with six-hour residue in the obstructive cases, generally diminished peristalsis, absence of peristal-

sis from involved areas, lessened mobility, and lessened flexibility of the stomach. Syphilis and other benign tumors may produce similar signs. The cardinal signs of gastric ulcer are the niche of penetrating ulcer and the accessory pocket of perforating ulcer, either of which represent the ulcer-excavation as visualized by the opaque meal. Other signs are the incisura — a local constriction in the plane of the ulcer — hour-glass stomach, residue in the stomach after six hours, localized pressure-tender point at the site of the ulcer, acute fish-hook form of the stomach with displacement to the left or downward, lessened mobility, and hypotonus.

The manifestations of duodenal ulcer include: hyperperistalsis, with or without six-hour retention, accessory pocket of a perforating ulcer, hypermotility, hypertonus, deformity of the bulbus duodeni, pressure-tender point over the duodenum, and reflex gastrospasm producing hour-glass con-

traction or transient incisuræ.

Haudek: Ultimate Results in Two Hundred and Fifty Operative and Non-Operative Cases of Deep Ulcer of the Body of the Stomach (Über die weiteren Schicksale operierter und nicht operierter Patienten mit tiefgreifenden Geschwüren des Magenkörpers auf Grund von 250 eigenen Beobachtungen). Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

On the basis of his immediate and late examinations for the past four years the author found that in all cases that he had diagnosed as chronic cratershaped ulcer of the fundus of the stomach by means of the niche appearing in the röntgen picture, there were frequent recurrences and periodically appearing symptoms in the cases treated internally, so that in general he thinks operation is indicated. This opinion is supported by the dangers which threaten in this disease, such as hæmorrhage, gradual loss of strength, malignant degeneration in 3.5 per cent of the cases; but he does not hold that the indication for operation is unconditional, for, on one hand, there are cases with relatively mild course, slight symptoms, and long intervals free of any symptoms, while, on the other hand, the results of the simplest stomach operation, gastro-enterostomy, are not always favorable on account of the high position of the ulcer.

Of 66 patients on whom gastro-enterostomy was performed 8 died, 5 of them because the primary disease was already too far advanced; in 26 cases the symptoms recurred, and in 20 cases the persistence or return of the niche indicated a continuance of the primary disease, in spite of the fact that the gastro-enterostomy functioned well. Six were operated upon again. Of 12 cases examined later in 1909 and 1910, there were 10 recurrences, so it is to be feared that in the future there will be a still

further decrease in the 16 cured cases.

Of 13 cases resected by the Billroth II method, 8 were cured, 2 improved, and 3 died a short time

after the operation. Of 6 jejunostomies, 3 cases which were in a very bad condition when operated on died, 1 case remained well, 2 cases recurred, and one of these was cured afterward by a transverse resection. Of 4 plastic operations 3 recurred, and the other case has not been heard from. Two gastrostomies also recurred and one of two gastroenterostomies. Of 17 transverse resections 14 were cured, 1 improved, 2 died.

The röntgen findings in transverse resection of the stomach are typical; there is a short contracted stomach with unusually quick emptying through the open pylorus. The author thinks this is a favorable factor in prognosis, as it prevents the collection of acid stomach secretion with its bad consequences. Transverse resection is technically difficult, but the results are excellent. The surgeon can judge of the degree of severity of the radical operation from the röntgen picture; it becomes more difficult with increase in size, high position, and involution of the

niche.

VON HABERER, Innsbruck, like Perthes, advocates radical operation in ulcer of the stomach; he resects in ulcer of the fundus and also of the pylorus. In ulcer at a distance from the pylorus he has become an absolute advocate of resection, because of the unsatisfactory results in simple gastro-enterostomy reported by Clairmont in von Eiselsberg's material. Von Haberer reports 83 resections for ulcer with 75 recoveries and 8 deaths. The late results are good. A great deal has been said about recurrence of ulcer, even after resection. Von Haberer doubts whether these are always true recurrences. He believes that more frequently than has been thought, there has been a second ulcer that was overlooked on operation. If, for example, an ulcer of the pylorus has been extirpated by the Billroth II method, and a second one has been left on the lesser curvature, after resection of the pylorus the same condition is present as after simple gastro-enterostomy in an ulcer at a distance from the pylorus. In such patients the symptoms may persist. Among 83 cases von Haberer had 15 of multiple ulcers; that is, in 18 per cent of the cases. He succeeded in finding these ulcers by palpation; they had often caused no change in the serosa. He was guided by the condition of the glands. · He found that in the neighborhood of the ulcer on one of the curvatures of the stomach, glands could always be felt and that sometimes they were somewhat reddened. If the part of the stomach in which these glands were found was palpated, the depressions of the ulcers could often be felt. If the pylorus is markedly stenosed it is very easy to overlook an ulcer high up on the lesser curvature, as in these cases there is apt to be a large saccular stomach; so that the second ulcer, even if it has penetrated, may not show in the röntgen picture, for such saccular stomachs cannot be entirely filled with bismuth. Von Haberer showed a specimen of such a one obtained on operation. The whole stomach should be carefully examined, and then better results may be expected.

FEDERMANN, Berlin, has performed 18 transverse resections for ulcer of the stomach, and in two of them a carcinoma has appeared within a year after the operation.

CLAIRMONT, Vienna, has had 146 good results in 305 gastro-enterostomies; that is, 48 per cent. Gastro-enterostomy is effective only in ulcer of the pylorus; in ulcer at a distance from the pylorus resection is to be preferred. KATZENSTEIN.

Melchior, E.: The So-Called Arteriomesenteric Occlusion of the Duodenum (Über den sogenannten arterio-mesenterialen Duodenalverschluss). Berl. klin. Wchnschr., 1914, li, 1637, 1660. By Surg., Gynec. & Obst.

The commonly accepted theory has been that the abdominal organs were held in place by ligaments - suspended in the abdominal cavity. That this is not true is shown by the structure of the mesentery, which contains no tendon fibers; moreover, it is absurd to suppose that the hepatogastric ligament could sustain the heavy filled stomach.

The organs of the abdomen really either float or rest on the organs below, these in turn being supported by the pelvic floor and the pressure of the abdominal walls. In accordance with the old theory duodenal ileus, or arteriomesenteric occlusion of the duodenum, is caused by the duodenum sinking down on account of relaxation of its support and becoming occluded by the root of the mesentery. But sufficient traction on the mesentery to produce such occlusion would cause the most intense and unbearable pain, as the sensitiveness of the mesentery is well known; moreover, it would cause interference with the mesenteric circulation, leading to thrombosis and gangrene. Neither of these two conditions occurs. As a matter of fact this socalled duodenal ileus is due to dilatation of the stomach and the upper part of the duodenum, in contrast with which the lower part of the duodenum appears constricted. Actual dilatation does not take place unless the stomach is filled with fluid or gas, but there is an atony of the musculature that will be followed by dilatation if precautions are not taken to prevent it; therefore Melchior proposes to call the condition acute gastroduodenal atony. It should be avoided by care during operation, especially with the anæsthetic, avoidance of manipulation of the stomach during operation, caution in giving fluids after operation, and irrigation of the stomach if any signs of atony develop.

The failure of the surgical procedures undertaken for the cure of the condition under the old theory should be sufficient to disprove it. The right treatment is not to select the correct surgical procedure, but to diagnose it early enough to avoid the necessity of any operation. A. Goss.

Reder, F.: Intestinal Anastomosis. Lancet-Clin., By Surg., Gynec. & Obst. 1914, cxii, 662.

The author reviews the history of intestinal anastomosis and intestinal suture from 1730 up to

the present time, and notes that no part of abdominal surgery has undergone more radical changes than intestinal suture, and that in no other department of surgery is the contrast greater than that between the ancient and modern methods of intestinal suture. He calls attention to the fact that the knots are often tied too tightly, thus inviting disaster, and another matter of equal importance is the placing of the stitch. Stitches should be introduced sufficiently close to render the line of suture impermeable to gases and fluids, and should be about an eighth of an inch apart. The amount of tissue included in each stitch and the extent of inversion of the wound margins must be accurately determined, lest a diaphragm of sufficient size be formed to act as a partial obstruction; enough of the serous surfaces, however, must be brought in contact to insure good agglutination.

In discussing whether the suture should be continued or interrupted, Reder thinks that from the analysis of the worth of these two sutures it can readily be inferred that a serous continuous stitch, supported by an inner continuous one, including all coats, would be the one of choice. The argument rather favors the double-row suture method, for it must be appreciated that an inner stitch invariably secures good and sufficient approximation, a firm apposition, and acts perfectly in controlling the bleeding from the cut edges of the gut. These facts, coupled with the added safety of an outer suture, give assurances that weigh heavy with the con-

scientious surgeon.

Considering the material best suited for intestinal suture, he states that nothing so far has taken the place of the fine silk or linen advocated by Pachen-

The technical methods of intestinal anastomosis involve two important principles-simplicity and safety. The general trend of surgical opinion is strongly toward the view that simple suture is the most desirable method for employment in intestinal anastomosis. The reason for this is that possibly the trained operator who is able to perform an anastomosis almost as rapidly with the suture as with a mechanical device has found that these appliances are unnecessary, and, furthermore, he feels that he is free from the risk of leaving anything behind that might cause dangerous results and even death when his work is finished. The axiom of successful intestinal suturing, "peritoneum to peritoneum," established by Lembert, holds good today.

Under the heading of "Artificial Aids" the author emphasizes that intestinal surgery is not free from surprises, and that occasionally conditions are encountered where it would be an undoubted convenience to use certain artificial aids. Prominent amongst these devices are the decalcified bone-plates of Senn, the decalcified bone-bobbin of Mayo-Robson, with modifications by Allingham and Hayes. The potato-bobbin of Coffey and the soap-bobbin of Reder may well be classed among these aids.

These bobbins are simple and safe and can be adapted to any of the operations on the intestinal canal. After the bowel-ends have been sutured over the bobbin, the aid is left to its fate in the canal.

It is usually safely dissolved or passed.

He also mentions that the rubber cylinder possessed the advantage that in an incongruence of the bowel-ends into which it was inserted it made their coaptation less difficult, thus facilitating the introduction of the sutures. Tension upon the intestinal wall could be readily controlled, and the removal of the bulb after the suture was nearly completed could be easily accomplished by deflation. The bulb's greatest disadvantage was the short life of the rubber.

The Murphy button is spoken of as a mechanical device introduced into the lumen of the bowel and utilized as a substitute for sutures. In the words of the author, "this button has exercised a more potent influence in the free application of intestinal surgery than any individual invention. It enjoys a distinction of its own, and is one of the many devices which has successfully weathered all sorts of attacks from all angles. The button is a most valuable device, and almost indispensable in intestinal surgery." The author's experience with it left no regrets, and the greatest compliment he can pay the Murphy button is his statement that he feels more at ease when he sees it upon the tray with the instruments for an abdominal operation. Murphy button possesses undoubted merit of a high degree. The great saving of time in its application is appreciated because it lessens shock. As a subjugating measure against infection, and in the lessening of post-operative paralysis, it has repeatedly demonstrated its great value."

The author states that intestinal anastomosis may be accomplished by one of three methods: (1) axial or end-to-end union; (2) lateral anastomosis with closure of the cut-ends of the bowel; and (3) lateral implantation or end-to-side union.

The selection of one of these methods is a matter of judgment with the surgeon. He must be guided by the conditions as they present themselves and as he recognizes them. His experience in this particular field of work, the most delicate and exacting in surgery, will dictate to him as to the best method to use.

If the condition of the patient permits, preference should be given to the double-row suture method; i.e., an inner suture, reinforced by a continuous outer one, with a Shoemaker mesenteric stitch.

If the condition of the patient is judged to be only fairly good, a single suture, the continuous Connell with the Lee mesenteric stitch, would be the suture chosen.

If the condition be such that the operation must be completed speedily, and if the operator feels a lack of faith in his skill, it would be well for him to make use of the Murphy button.

The author states that if he were asked what method he would prefer in effecting a bowel junction, either end-to-end or lateral, his reply would be that in a healty bowel—gunshot or stab wounds—he would use the end-to-end union, whereas in a diseased bowel—gangrenous bowel or malignant disease—he would have recourse to the lateral method, as it is absolutely necessary to maintain as good a blood supply as is possible where an excision of a diseased bowel is to be undertaken. Such a blood supply can be best maintained with a lateral anastomosis, because the incision for the purpose of communication is made in the terminal twigs of the blood supply and at a distance from the divided mesenteric trunks.

The author's allusion to the method of lateral implantation is brief. The technique of an end-to-side union he has found invariably more difficult to execute than that of any other method. It seems to him that the procedure possesses one serious drawback; i.e., the liability of the opening contracting. To obviate this, it would become necessary to enlarge the bowel openings either by an incision or a partial excision of the intestinal wall. This would create a so-called fatal suture angle, one well to avoid in intestinal surgery if at all possible.

Lateral implantation seems to have a working field in colocolostomy and ileocolostomy and in some cases of enteric exclusion. In his work of partial gastrectomies Kocher gives laudabl expression to this method.

The anastomosis can be effected either with the single or two-row suture, or, as is frequently the

case, with the Murphy button.

Reder fails to see the advantage that a lateral implantation might possess over a lateral anastomosis. It seems to him that in it are embodied all the difficult steps of the other methods.

ARTHUR B. EUSTACE.

Palmer, W. W.: The Absorption of Protein and Fat after the Resection of One-Half of the Small Intestine. Am. J. M. Sc., 1914, cxlviii, 856.

By Surg., Gynec. & Obst.

Palmer reports certain absorption observations obtained from a woman, aged 40, from whom 235 cm. of intestines were removed by Codman. In June, 1013, the first operation was done for many tuberculous ulcers of the small intestine, lower onethird; a jejunocolostomy was done to relieve this condition, but owing to a distressing diarrhœa and abdominal cramps, in August a second operation was performed in which the lower half of the small intestines and the ascending colon was resected, making in all 235 cm. A lateral anastomosis between the small intestine and the colon was made, and the immediate recovery was good. She was then referred to Palmer, who carried out an extensive absorption experiment. At first on a low fat diet she improved, and was allowed to go home, but she soon developed numbness and "peculiar drawing sensations" in the legs, forearm, and face. This was recognized as a condition of

tetany. Chyostek's, Trousseau's, and Erb's phenomena were all well marked.

A second absorption experiment, together with a study of the calciun metabolism, was carried out. After the institution of a low fat diet and the use of calcium there was a marked and rapid improvement, and soon the Chyostek and Trousseau phenomena could not be elicited, and the electrical reactions were normal. This improvement continued for three months, when she gradually lost weight, and suddenly the tetany returned; again upon the administration of the calcium the tetany

disappeared in three days.

The stools showed little change in gross appearance, but microscopically there was present more neutral fat than on any previous examination. For the next three months she made no progress, vomiting continued, and the tetany symptoms were present in varying degrees most of the time. Trousseau's sign was easily elicited. In the upper abdomen directly above the umbilicus a sausageshaped tumor could be felt, and another one under the scar of the previous operation. A third absorption experiment was carried out, and without apparent cause she became mildly delirious, had ideas of persecution, and insisted on being taken home. The urine at no time showed albumin, sugar, acetone, or diacetic acid.

Palmer describes minutely the methods and diet used by him in his experiments. The diet used in periods 1 and 3 consisted of eggs, bread, sugar, butter, and milk accurately weighed, and the nitrogen and fat was computed from the tables of

Atwater and Bryant.

In period 2 the food was analyzed for nitrogen, fat, and calcium. The food mixture was the one

employed by Folin.

In 1912 Flint gathered all the cases in which 200 cm. or more of intestine had been resected, 59 cases in all. Denk removed 540 cm. (21 ft. 3 in.) of the small intestine from a woman 61 years of age, and he reports good recovery with no intestinal disturbances. It is claimed that in dogs one-half of the intestines can be removed without seriously affecting growth or metabolism; even as much as 75 per cent of the intestine has been removed with recovery, but the dog usually dies of inanition, due to uncontrollable diarrhœa.

In man the condition of the intestine is of the utmost importance, and should receive careful consideration whenever extensive resection is contemplated. Palmer insists that the greater the certainty of leaving nothing but healthy intestine the more frequently may extensive resections be successfully undertaken. He warns against resecting more that one-half of the small intestine in man. In man as in animals fat absorption is most disturbed, nitrogen less interfered with, and the carbohydrates are nearly always absorbed in a normal

It is interesting to observe the calcium metabolism in this case; normally calcium is excreted by the bowel, and during tetany following parathyroidectomy there is a marked loss of calcium from the body. The remarkable improvements in this patient's condition proves its importance in this tetany.

Palmer's conclusions are:

1. Absorption studies after resection of the lower half of the small intestine are reported.

2. The loss of nitrogen in the stools is from four

to five times that of normal individuals.

3. The loss in fat in the stools is five to six times the normal loss.

4. A high urinary indican, 800 mgs., is reported. 5. Ammonia forms a much larger part of the

urinary nitrogen than in normal individuals. 6. The success with which larger portions of the intestines may be removed depends to a large degree on the condition of the intestine remaining.

7. A diet low in fat and moderately low in protein should be given in cases where extensive resections are undertaken. LEWIS B. CRAWFORD.

Heile: Physiology of the Appendix (Zur Physiologie des Blinddarmanhanges). Deutsche Gesellsch. f. Chir., 1914.
By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author reports experiments designed to explain the physiological functions of the appendix. There are two factors to be investigated: the internal secretory activity of the mucous membrane of the appendix, and the position and innervation of the appendix with reference to the valve of Bauhin.

I. The internal secretion of the mucous membrane of the appendix consists of digestive ferments, an albumin-splitting trypsin, and a carbohydratesplitting ferment; there are also hormones which, when injected intravenously into rabbits, cause marked peristalsis, the movement being isoperistaltic. These internal secretions are analogous to those demonstrated in the same way by the author in the mucous membrane of the cæcum. These activities confirm the previous conception of the appendix; namely, that it is similar to the wall of the cæcum not only in its microscopic anatomy, but also in its functional secretions. The ferments and hormones in the appendix are very abundant in quantity; this the author thinks is due to the fact that the chief agent in the internal secretion is lymphoid tissue, which is known to be especially abundantly developed in the appendix.

2. The relations to Bauhin's valve are as follows: The appendix represents the termination of the longitudinal musculature of the cæcum. The posterior longitudinal band passes over from the appendix into a circular muscle. The ileocolic muscle passes circularly around the end of the small intestine where it opens into the cæcum, and when it contracts closes the end of the small intestine through a segment of the mucous membrane of the small intestine that projects into the end of the cæcum over the circular muscle, and which, on

counterpressure from the cæcum, acts as a valve and strengthens the resistance to fluid or air flowing backward from the cæcum. The most important factor in this occlusion is the ileocolic muscle; this muscle is innervated from branches of the splanchnic, which accompany the superior mesenteric artery and anastomose with fibers that run to the appendix through the mesenteriolum of the appendix.

In 30 laparotomies the author demonstrated the following facts: Normally the muscle-flap absolutely prevents retrograde movement of fluid or gas from the cæcum into the small intestine. In 1 to 2 per cent of cases the flap allows retrograde movement. The muscle-flap is always found open in those cases in which the mesenteriolum of the appendix shows cedematous infiltration as the result of inflammation; as for example, after acute appendicitis. Then the contents of the closed-off end of the cæcum can be pushed back into the small intestine without resistance. The same thing is rendered possible when the nerves of the mesenteriolum up to the entrance of the small intestine are interrupted with novocaine.

The author assumes that the action of the ileocolic muscle is related to the contraction of the longitudinal band of the cæcum in the manner of antiperistalsis, and that the internal secretions of the appendix have stimulating and inhibitory effects on the tonus of the ileocolic muscle.

Conditions of abnormal resistance or insufficiency of the valve of Bauhin, according to the author, deserve more study. Clinical symptoms which are often regarded as the result of cæcum mobile or chronic appendicitis may be due to insufficiency or a convulsive condition of the muscle-flap. He had two patients in whom colic-like pains in the ileocæcal region were fully overcome by appendectomy and lengthening of the ileocolic muscle in the manner of a pyloroplastic operation.

Katzenstein.

Bischoff, C. W.: The Bastedo Sign in the Differential Diagnosis of Chronic Appendicitis (Zur Differentialdiagnose des Appendicitis chronica). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 398. By Surg., Gynec. & Obst.

Attention is called to Bastedo's method, which consists of the inflation of the colon to be employed as the cardinal differential point between chronic appendicitis and right-sided disease of the uterine appendages, with special reference to the stratum, abdominal or vaginal, to be chosen for an operation. If the appendix is involved a sharp pain is experienced about McBurney's point, which is absent if the right pelvic organs alone are affected. In the latter case only a sense of fullness is experienced. The author used this method previous to laparotomy in 37 cases irrespective of the cause. In 23 cases the Bastedo sign was present, and in all of these the appendix was affected in some way; while in the remaining 14 cases where the sign was not obtained, no changes were found in that organ. In 6 cases the right uterine adnexa were known to be in an inflammatory state, but none of these gave the

Bastedo sign; thus appendix involvement was excluded, which was verified during the operation.

In 3 cases a marked pyosalpinx with extensive intestinal adhesions was present. None of these cases gave the Bastedo sign and the appendix was found to be normal. In a number of these cases where the appendix was found to be normal there had been a previous history of pain in McBurney's region. The author calls attention to the good services Bastedo's method has rendered in the differential diagnosis between severe neuralgia and appendicitis.

Rost in 1912 stated that the Bastedo sign was present also in diseases of the colon. Further, that the appendix would respond only if it was bound down to the cæcum by changes in its mesenteriolum. The author found that the sign was present in a number of cases in which the mesenteriolum showed no changes whatever. Rost demanded at that time also that the valency of Bastedo's method be proved by applying it to patients whose appendices had been removed. This the author did in a number of his cases which responded previous to operation, and he could not obtain the symptom in any of them.

L. A. EMGE.

Wolkowitsch, N. M.: The Muscle Symptom in Chronic Appendicitis (Das Muskelsymptom bei chronischer Appendicitis). Russk. Vrach, 1914, xiii, 601. By Zentralbl. f. d. ges, Chir. u. i. Grenzgeb.

The author called attention in 1911 to a symptom which he called the muscle symptom that he could always demonstrate in the intervals of chronic appendicitis. Diagnosis based on this symptom was frequently confirmed on operation. In contrast with the condition in acute appendicitis where the muscles of the ileocæcal region are tense and have a greater tonus than those of the left side, he could always demonstrate that in chronic appendicitis the opposite was true: the musculature on the right is more flaccid and less voluminous than on the left. This difference in tonus can be perceived clearly on palpation with the hand, especially if care is taken to avoid any irritation before the palpation, such as deep palpation and laxatives.

The author has made tests on fifty patients with the help of Exner and Tandler's tonometer and in all cases confirmed the findings on palpation. To be sure the tonometer showed only slight differences on the right and left, from fractions of a degree up to 1.5 degrees. He explains this by the fact that the fat layer and still more the organs of the abdominal cavity increase the readings of the tonometer. He cannot say at present whether the symptom is present in other diseases of the abdominal cavity or whether it has value in differential diagnosis.

In conclusion, he points out that this symptom frequently coincides with a scoliosis of the spinal column to the right, and other authors, among them Mayet and Delapchier, have previously pointed out the connection between chronic appendicitis and left scoliosis of the spinal column. Von Holst.

Opitz: Causes of Appendicitis (Über die Ursachen der Wurmfortsatzentzündung). Deutsche Gesellsch. f. Chir., 1914.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

On the basis of observations made in gynecological laparotomies, the author reports the frequency of adhesions of the cæcum, sigmoid, and appendix. Among 160 cases which remained from a much larger material after excluding those in which the information was insufficient, there were only 14 cases in which the cæcum, appendix, and sigmoid were all free of adhesions. In all the others there were peritoneal adhesions, varying greatly in degree.

The appendix was free of adhesions in 76 cases, the cæcum in 36, and the sigmoid in 20. The nature of the adhesions must be regarded as chiefly inflammatory. Congenital peritoneal adhesions did not appear in more than 20 per cent of the cases, while in the material of the Giessen gynecological clinic there were adhesions in go per cent of the cases. From this Opitz draws the conclusion that the large intestine, especially the ascending colon, cæcum, and sigmoid, is much more frequently diseased than the appendix. But microscopic examination of 100 so-called stolen appendices showed that the appendix presented signs of past inflammation of mild or severe degree in a much higher percentage of cases than would be supposed from the external appearance of the appendix. Of 99 appendices only 20 were entirely or approximately normal, 43 showed marked signs of old changes, rather mild in degree, while 31 showed pronounced signs of severe phlegmonous or ulcerous processes, although the history showed no previous attack of appendicitis. From these facts the author draws the following con-

1. Diseases of the large intestine, in the form of typhlocolitis, sigmoiditis, etc., are much more frequent than diseases of the appendix.

2. Diseases of the appendix are caused for the most part by preceding diseases of the colon.

3. The transmission of the disease takes place, as Aschoff has shown, not by an extension of the inflammation from the wall of the cæcum to the wall of the appendix, but by infectious intestinal contents penetrating the appendix and being held there for some time. In this the chemical composition of the intestinal contents seems more important than its bacterial content. Nervous disturbances are also involved, either directly from irritation of the vegetative nerves by adhesions, or by absorption of toxins, causing circulatory disturbances in the appendix.

The author leaves unsettled the question of how far cæcum mobile and related conditions are responsible for the origin of diseases of the large intestine, but he agrees with Klose, Eastman, and others that in the treatment of diseases of the appendix it is not sufficient to make a small incision and remove the appendix, but a large enough incision should be made to examine the surrounding parts. KATZENSTEIN.

Aschoff, L.: Do Worms, Especially Oxyuris, Cause Appendicitis Directly or Indirectly (Sind die Würmer, besonders die Oxyuren, direkt oder indirekt, schuld an der Appendicitis)? Berl. klin. Wchnschr., 1914, li, 1504. By Surg., Gynec. & Obst.

It has long been known that the appendix is frequently infested with oxyuris, and Aschoff several years ago described a condition of pseudo-appendicitis caused by these worms. Rheindorf has claimed that they are responsible for true appendicitis with destruction of tissue. From the examination of a vast amount of material Aschoff cannot confirm this finding and concludes that they do not cause true appendicitis, either directly or indirectly. However, greater attention should be given to infection with these worms, especially in children, for they cause attacks of psuedo-appendicitis, which frequently cause the children to be subjected to unnecessary operation.

Péraire, M., and Boyet, J.: New Method of Distinguishing the Acute from the Non-Acute Stage in Appendicitis or Salpingitis (Nouveau procédé pour reconnaître si une appendicite ou une salpigite est ou n'est pas refroidie). Rev. internat. de mèd. et de chir., 1914, xxv, 164. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The authors maintain that the appearance of acetic acid in the urine is a sure sign of fresh inflammation in the appendix or tubes. With the appearance of fresh inflammation acetic acid appears in the urine; the lack of it shows reliably the retrogression of the inflammation. FREUND.

Duffy, R.: Pituitary Extract in Post-Operative Intestinal Stasis. N. Y. M. J., 1915, ci, 72. By Surg., Gynec. & Obst.

The author quotes extensively from authors who speak very favorably of the use of pituitary extract in post-operative intestinal stasis. In many cases in which it was impossible to get a bowel movement or to promote flatus after operation by any of the ordinary means, an injection or two of pituitrin brought rapid relief. Incidentally, it was advantageously used in cases of shock and of difficulty in micturition.

He cites ten of his own cases, in four of which it was used only after other measures had failed, and in six it was given as a routine measure six, twelve, and eighteen hours after operation. In the former group the results were uniformly good, in the latter group a favorable result was noted in all but one

The author's conclusions are as follows:

1. Pituitary extract is an important aid in postoperative paralytic ileus.

2. It should be tried in all cases in which purgatives are not retained by mouth.

3. Its effect on the peristalsis in cases with tympanites seems to be more marked than in cases with no intestinal distention.

ALFRED H. NOEHREN.

Delatour, H. B.: Persistent Embryonal Type of Large Intestine. Ann. Surg., Phila., 1915, lxi, 73. By Surg., Gynec. & Obst.

Failure of rotation of the large intestine, either partial or complete, is occasionally encountered in adult life. Acute abdominal conditions occurring under such circumstances may easily be incorrectly diagnosticated. Of the more common forms of embryonal type is a high right-sided position of the cæcum. Appendicitis in such cases, especially in the adult, may be mistaken for acute cholecystitis. Delatour relates such a case in which a gangrenous appendix was successfully removed. This represents an arrest of rotation of the large intestine at about the fourth month of intra-uterine life. He quotes Smith as finding this condition 63 times in 1,050 autopsies on infants under 3 months of age. He himself has observed o adults with undescended cæcums. The condition is sufficiently common in children, he believes, to indicate a higher incision for appendicitis than in adults.

Another case in an adult illustrates an earlier period of arrest. The signs and symptoms indicated an acute condition in the left upper quadrant. Operation disclosed an appendix abscess to the left of the spine with the appendix adherent over the left kidney. The cæcum was high with a very short ascending and transverse colon. A third case in a youth of 10 with signs and symptoms indicating acute inflammation in the left lower quadrant was correctly diagnosed as left-sided appendicitis. cæcum was found in the left iliac fossa with the ascending colon passing directly upward to the left of the spine parallel to the descending colon. Subsequent bismuth examination showed some gastroptosis with the duodenum directed in a straight course to the right, the small intestine occupying the right half of the abdomen and the large intestine the left side, as noted at operation.

The author states that the discovery of the small intestine uncovered by omentum or large bowel through an incision in the right side should lead one to suspect non-rotation of the large intestine.

T. W. HARMER.

#### LIVER, PANCREAS, AND SPLEEN

Einhorn, M.: Direct Examination of the Duodenal Contents and Bile as a Means of Diagnosis in Diseases of the Gall-Bladder and Pancreas (Die direkte Untersuchung des Duodenalinhalts und der Galle als diagnostisches Hilfsmittel bei Gallenblasen und Pankreasaffektionen). Berl. klin. Wchnschr., 1914, li, 1888.

By Surg., Gynec. & Obst.

Frequently the typical picture is not present in gall-bladder disease, and the diagnosis of pancreatic disease has always been difficult. Einhorn advises the direct examination of the contents of the duodenum for the purpose of differentiation. The contents can be obtained by aspiration. If nothing is obtained after 5 to 10 minutes, aspiration secretin can be given subcutaneously and aspiration per-

formed again in 3 to 5 minutes, or duodenal irrigation may be resorted to. His results in 24 cases are

given in the form of a table.

The macroscopic appearance of the bile is of importance. If it is golden yellow and clear, the gall-bladder is generally normal; if it is greenish yellow and turbid, it indicates gall-bladder disease, usually stones. Golden yellow bile with mucus is often found in catarrhal jaundice. Occasionally a clear golden yellow bile is found even when there are stones. Duodenal contents which contains both bile and pancreatic juice, makes it possible to test for pancreatic function. If all three pancreatic ferments are present, it indicates normal function; if one of them is absent, it indicates chronic pancreatitis. There may be a tumor of the pancreas even if all three ferments are present; the tumor may have left enough healthy tissue uninvolved to carry on the function of the organ. This condition is sometimes met with in other organs, as the stomach and kidney. Duodenal contents that contains neither bile nor pancreatic secretion indicates an obstruction just above Vater's ampulla. In all the cases given in the table operation or later clinical evidence confirmed the diagnosis made from the contents of the duodenum.

Aoyama, T.: Experimental Study of Cholelithiasis (Experimenteller Beitrag zur Frage der Cholelithiasis). Deutsche Ztschr. f. Chir., 1914, cxxxii, 234. By Surg., Gynec. & Obst.

Aoyama performed a series of experiments on rabbits and guinea pigs from which he draws the following conclusions: If the cystic duct is ligated in normal rabbits and guinea pigs peculiarly formed elements are produced in the gall-bladder. It is questionable whether these formations have anything to do with true stone formation. Among 14 such experiments on rabbits a concrement similar to a pure cholesterin stone was formed once. To explain this fact we must assume an anomaly in metabolism, a cholesterin diathesis. If we inject cholesterin or its fatty acid esters subcutaneously into rabbits or guinea pigs and then ligate the cystic duct bodies similar to pure cholesterin, stones are precipitated from the bile in the bladder. This process takes place without the action of bacteria. This shows beyond doubt that cholesterin stones may form aseptically.

The giving of cholesterin or its fatty acid esters by the mouth leads to the same results as above. This shows that a diet rich in cholesterin must be avoided, especially in those predisposed to chole-lithiasis. Congestion is a factor that plays a part in the formation of cholesterin stones. The gall-bladder has a certain amount of active influence in the formation of stones. The results of these experiments explain to a certain extent the difference in frequency of gall-stones in different countries. Pure cholesterin stones are not necessarily produced by a process of metamorphosis; they may exist in that form from the beginning.

A. Goss.

Nemiloff, A. A.: Experiments in Free Transplantation of the Pancreas (Versuche freier Pankreastransplantation). Dissertation, St. Petersburg, 1914. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

From an exhaustive study of the literature the author comes to the conclusion that in addition to its external secretion the pancreas also has an internal secretion that is probably due to the islands of Langerhans. The aim of this work was to determine whether it was possible by homologous transplantation of the pancreas to compensate for the internal secretion of the diseased gland, and in this way find

a means of overcoming diabetes.

The author operated on 84 dogs and performed 67 transplantations, in which he avoided autodigestion of the transplant by previous ligation of the excretory duct, thus producing a certain degree of atrophy, or by using the pancreas of newborn dogs. For the sake of comparison some experimental autotransplantations and transplantations of normal pancreatic tissue were done. The discshaped pieces of tissue, 1 to 2 cm. in diameter, were transplanted for the most part subcutaneously, some of them into the great omentum, some of them into the mesentery, and in two cases subserously into the small intestine. The animals were killed after periods varying from 24 hours to five months and 20 days; they were killed by injection of chloroform into the heart. In the course of the first two weeks the transplant could still be found as such; later it could be found only microscopically. The histories of all the experiments are given in

The author's study and experiments lead him to

the following conclusions:

I. Pancreatic tissue transplanted either autoor homoplastically, subcutaneously, or intra-abdominally is for the most part absorbed in the course of a few days, and is transformed in a short time into structureless ruins.

2. A thin zone of living parenchyma remains only at the edge of the transplant, and this is more

pronounced in autoplastic experiments.

3. In the tissues surrounding the transplant there are first signs of inflammation with hæmorrhagic exudate, then granulation tissue is formed and transformed into cicatricial tissue, which finally replaces the transplant as it is absorbed. In this process the remaining zone of parenchyma finally disappears, more quickly in homoplastic than in autoplastic transplants.

4. The islands of Langerhans are rarely found in the transplant, and they also undergo secondary

atrophy and destruction.

5. No signs of regeneration were ever found.6. The longest interval after which remnants of parenchyma were still found was 14 days; the process of cicatrization was finished in the third

7. The cicatricial tissue at the point of transplantation gradually underwent fatty degeneration STROMBERG. and was absorbed.

Kreuter: Experimental Study of the Effect of Extirpation of the Spleen on the Peripheral Blood Picture (Experimentelle Untersuchungen über den einfluss Milzexstirpation auf das periphere Blutbild). Arch. f. klin. Chir., 1914, cvi, 191. By Surg., Gynec. & Obst.

The reports of blood counts after extirpation of the spleen have varied greatly. Kreuter undertook a series of experiments on rhesus monkeys, as the morphology of their blood is very similar to that of man. From his experiments he comes to the conclusion that it is highly improbable that the loss of the spleen in the normal individual has any appreciable effect on the peripheral blood picture and the hæmatopoëtic system. Tables are given showing the blood count in his monkeys before and after the operation.

#### **MISCELLANEOUS**

Connell, F. G.: The Chronic Abdomen; a Review of Nineteen Cases of Pericolitis and Ileal Kink in Which the Appendix Had Been Previously Removed. Surg., Gynec. & Obst., 1914, xix, 742. By Surg., Gynec. & Obst.

The acute abdomen calls for mortality tables, the chronic abdomen calls for morbidity tables. The latter is characterized by abdominal pain; intestinal disturbance, constipation; and general symptoms, auto-intoxication or subinfection. Among the latter the symptoms called "nervous" are strikingly prominent and constant, and their relation to the main abdominal complaint calls for elucidation on

the part of the neurologist.

The chronic abdomen has been attributed to various causes at various times in the evolution of abdominal surgery; for example: ovarian-prolapse, cysts, adhesions, neuralgia; tubal—chronic salpingitis; uterine—displacements; appendiceal—chronic appendicitis; renal—floating kidney, Dietel's crisis; biliary-cholecystitis, calculous or non-calculous; duodenal-ulcer; gastric-ulcer, cardiospasm, pylorospasm; enteroptosis; lues-gastric crises. But each of these has been insufficient as an explanation. The most recent explanation is the presence of intra-abdominal adventitious bands or membranes, such as the ileal band, and the pericolic or other membranes. But the fact that such structures were found to exist without causing symptoms has given rise to great confusion as to their clinical significance.

In order to arrive at some definite understanding as to the etiological relationship between these bands or membranes and the symptoms complained of, the author has reviewed, as to the remote result, a series of cases in which the operative procedure was confined entirely to these structures; so that favorable results, if secured, might be attributed to the removal or correction of coincidental pathologi-

cal conditions.

Nineteen cases in which the appendix was previously removed are analyzed. In only one case was the primary operation for acute appendicitis, and in no case at the second operation was there any evidence of "adhesions" at the appendiceal stump.

The results are as follows: One case is too recent for consideration; 7 cases were markedly relieved from symptoms; II cases showed no improvement. The primary result in all cases was favorable, but the symptoms returned after variable periods. The author emphasizes the necessity of awaiting remote results before drawing conclusions.

## SURGERY OF THE EXTREMITIES

#### DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Mayer, L., and Wehner, E.: An Experimental Study of Osteogenesis. Am. J. Orth. Surg., 1914, xii, 213.

By Surg., Gynec. & Obst.

In view of the divergence of opinion regarding the function of the periosteum and the bone-cell in regeneration of bone, these experiments were undertaken with the hope of determining (1) to what extent the bone-cells of a transplant maintain their vitality, (2) the relative importance of the periosteum and the connective-tissue cells in osteogenesis, and (3) the process by which the new bone replaces the transplanted bone. The 50 experiments consisted of periosteal transplants, subperiosteal resections, transplantation of bone, and "cap" experiments. In these cap experiments the periosteum was removed over a definite area and a glass or metal cap placed over part of this area so that the behavior of the bone-cells could be studied beneath this cap without the possibility of confusion with periosteal growths. In all of the 4 experiments with free periosteal transplants the periosteum was gently removed without scraping and placed in the thigh. New bone was generated in all these trans-

The conclusion from 6 experiments of subperiosteal resection of rabbits' ribs is that the regeneration which takes place is due to periosteal activity and is not dependent upon an outpouring of osteoblasts from the bone, such as Macewen pictures. To study the osteogenetic function of the fixed bone-cell 23 experiments were made on rabbits and dogs. Parts of the bone thoroughly denuded of periosteum were isolated by being covered with glass or metal caps, 6 mm. in diameter, which were embedded with a groove cut with a trephine. Although in some of these the periosteum grew under the cap, in o cases the periosteal growth was completely excluded and the bone under the cap after from two to fifty-five days had not shown the slightest sign of regeneration. Twenty-two experiments with autogenous bone transplants in rabbits support the view of the majority of observers that the transplanted bone does not live. These conclusions are at variance with those of Macewen and McWilliams, who claim that the bone-cells of the transplant live and proliferate.

Regarding the periosteum it is concluded that the new bone growth comes from its osteogenetic layer and that in cases where the periosteum was macroscopically removed, and regeneration took place, there was microscopical remains of this osteogenetic layer still present on the supposedly denuded surface. The method of replacement of the old bone with new is an advancement of the living osseous tissue by intercellular deposits of bone and probably also by direct growth of the young bone-cell into the old lacunæ. The conclusions of the authors are supported by convincing camera lucida drawings of specimens from their experiments. W. A. Clark.

Phemister, D. B.: Necrotic Bone and the Subsequent Changes Which It Undergoes. J. Am. M. Ass., 1915, lxiv, 211. By Surg., Gynec. & Obst.

There is a great difference between the behavior of necrotic bone and that of necrotic soft parts. Because of its high content of calcium salts, the stroma of bone resists the ordinary processes and requires special agents for its absorption. Its fate depends somewhat on the locality. For example, if a bone transplant is made into other bone where function is desired, the old bone is gradually absorbed and replaced by new bone by a creeping process of osteoclasis, revascularization, and proliferation of osteogenetic cells, but if the transplant is into soft parts the bone becomes necrotic and is slowly absorbed with very little formation of new bone. In case of infection the process varies.

In osteomyelitis of long standing the walls of the cavity become sclerotic and the regeneration of new bone is prevented on that account. Here the necrotic bone becomes separated as a sequestrum; but in less severe infections this does not occur, the dead bone being absorbed and replaced without detachment.

In case a transplant becomes infected the process is similar to that used in osteomyelitis; part of the transplant may be cast off as a sequestrum. Tuberculosis of bone causes destruction so slowly that the absorption keeps pace with the destruction. The dead bone may be converted into bone sand by the invading tuberculous granulation tissue, or, if long standing, may calcify. This calcification is regarded as a reparative process, but it is not known whether or not the calcified masses are replaced by new bone. A thin layer of tuberculous granulation tissue separates the living bone from the dead, and it is the author's opinion that, from a pathalogic standpoint, surgical removal of this layer is clearly indicated in order that living bone may replace the necrotic bone.

W. A. Clark.

Koch, J.: Experimental Rickets (Über experimentelle Rachitis). Berl. klin. Wchnschr., 1914, li, 773, 836, 886. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author refers to his earlier investigation of the relation between infection and bone changes in childhood and now claims to have demonstrated experimentally that rachitic bone changes are to be attributed to infection. Among the different laboratory animals he has found young dogs, 8 to 12 weeks old, most suitable for this purpose.

Among the bacterial cultures used, which were injected intravenously, he secured the most uniform results with streptococcus longus. While the injection of other bacteria usually caused general infection or intoxication, from which the animal finally died with sepsis, and with more or less involvement of the joints; with streptococcus longus after a short general disease a localization at the joint-ends of the bone could almost always be demonstrated.

The acute stage of the disease is characterized as follows: After an incubation period of one to three days the joints and the surrounding tissues show painful swelling. The sequence of joints involved is not uniform. The duration of this acute stage varies from a few days to two weeks. Microscopic and cultural examinations show that there is inflammation of the joint and surrounding tissues in which the primary or chief focus lies in the marrow of the metaphysis of the bone; and the joint effusion, which is almost always sterile at first, is to be regarded as a secondary phenomenon. Cocci can be demonstrated only in the marrow of the metaphysis, where they do not produce suppurative inflammation, but only degenerative changes. The noteworthy fact that the streptococcus longus has only a slight pathogenicity with small tendency to suppuration and general sepsis in the young dog, is analogous to the condition in the child, which seldom has a general sepsis in spite of the frequency of hæmatogenous mixed infection with streptococci in the course of scarlet fever, diphtheria, measles, etc.

The microscopic findings show the following: Besides multiple disseminated pathological foci, mostly necrotic parts of the bone-marrow, the most striking thing is the degenerative changes in the boundary between the bone and cartilage. After a time in the place of these degenerative processes marked proliferative processes appear, and the hyperæmia, which was already physiologically present, is increased by the long-continued disturbance of intracartilaginous ossification. To this chronic hyperæmia in the osseous system is to be attributed the fact that the normal, already calcified bone undergoes a loss in calcium salts, while such salts are not deposited in the new-formed cartilage and bone tissue. The bone gradually becomes soft and pliable.

The chronic stage of the disease is characterized by the fact that after the cessation of the acute symptoms, peculiar bone disturbances and deformities appear, which in pronounced cases give the im-

pression of rachitic deformities. The author shows by a series of photograms how these bends in the bone and the thickening of the joint-ends develop. Besides these changes a disturbance of growth is observed throughout almost the entire skeleton, as shown by abnormal softness and pliability, and by changes in the teeth.

With regard to the histological findings in the osseous system the author considers the rachitic changes observed at the height of the disease as the end-product of an incomplete and much disturbed regenerative process, which takes place at the boundary between the cartilage and bone, in the adjoining marrow, and in the remainder of the bone during

the growth of the animal.

In conclusion, Koch attempts to refute the prevailing conceptions with regard to the cause of rickets, and by his animal experiments shows that "domestication," the relation of which to rickets in animals has been so frequently observed, is only a predisposing factor. The primary cause is infection, once or oftener, and this is very apt to occur in

animals that live unhygienically.

From his extensive experiments he concludes that streptococcus infection may cause a characteristic disease of the osseous system of young dogs during their period of growth, that may be designated at first as a pathological disturbance of normal ossification, but when in the further growth of the animal it becomes fully developed, it cannot be called anything else than a rachitic change, from both the macroscopic and microscopic pictures. STAMMLER.

#### Clopton, M. B.: The Diagnosis and Treatment of Osteomyelitis. Surg., Gynec. & Obst., 1915, xx, 6. By Surg., Gynec. & Obst.

The topics considered are the diagnosis and treatment of osteomyelitis, and the observations are based on an experience with 31 cases. Nine acute cases were treated. The femur was involved 23 times, the tibia II times, the humerus 6 times. the radius 3 times. In 9 cases the femur alone was involved, in 8 cases the tibia alone, in 2 cases the humerus alone, and in I the fibula alone. The hip was involved in 15 cases, 6 of which gave symptoms similar to tuberculosis.

In the acute stage the diagnosis must be made between septic arthritis, or in profoundly toxic cases from septicæmia. In osteomyelitis the swelling of the joint is usually late, and swelling and tenderness of the shaft is early. In chronic osteomyelitis a differential diagnosis from tuberculosis, syphilis, and new-growth has to be made. Tuberculosis is a chronic disease that invades the epiphysis, and syphilis gives a similar picture, both clinically and by the X-ray.

The treatment in the acute stage is to drain the medulla by making a deep channel extending the length of the infection in the shaft. Gutta-percha tissue is used to drain. The medulla should never be "cleaned out" or curetted away, as it is needed for endosteal regeneration. In the subacute and chronic stage, treatment of the femur and humerus is planned to allow the shaft to heal after efficient and sufficient drainage. If sequestra form they should be removed and the cavity wiped out with gauze — not curretted or disinfected. Mosetig-Moorhof's iodoform beeswax mixture is introduced into the cavity to act as a drain; it is partially ab-

sorbed and partially extruded.

When one bone of the forearm or lower leg is involved, and at times the humerus, the shaft is removed subperiosteally about 5 or 6 weeks after the acute stage. The periosteum should at this time be thick enough to cast a shadow on the X-ray plate. After removing the shaft the periosteum is sutured into a ribbon. New bone immediately begins to develop and in about four months can support weight. By this operation the healing time is much reduced, and an infectious nidus is removed. Occasionally in badly infected cases complete regeneration does not occur and bone-transplantation has to be resorted to after healing occurs.

### Gilbert, Q. O.: A Case of Typhoid Osteomyelitis. J. Mich. St. M. Soc., 1914, xiii, 714. By Surg., Gynec. & Obst.

The author reports a case of typhoid osteomyelitis of the tibia occurring two and one-half years after a prolonged fever, presumably typhoid. The onset was characterized by moderate pain and tenderness, followed four weeks later by a chill and temperature reaching 104°. There was slight swelling and elevation of temperature over the upper portion of the tibia. The leucocytes numbered 8,250. The X-ray showed central erosion of the tibia with marked sclerosis and periostitis. The diagnosis was based on the physical findings, absence of leucocytosis, and marked Widal reaction. At operation a sequestrum and considerable pus were removed, from which a bacillus was isolated in pure culture answering to the characteristics of bacillus typhosus. The process is supposed to have been primary in the medullary or cortical bone in contrast to the usual type in which the periosteum appears to be involved first.

From the literature it appears that typhoid bone lesions may occur immediately after the fever or as late as seven years afterward. The bones most frequently involved are the tibia, ribs, femur, ulna, humerus, pelvis, and foot. The prognosis is good though there is a tendency to chronicity and to recurrence in other bones.

F. J. GAENSLEN.

Wolfsohn, G.: Biological Diagnosis of Surgical Tuberculosis (Die biologische Diagnostik chirurgischer Tuberkulosen). Zentralbl. f. d. Grenzgeb. d. Med. u. Chir., 1914, xviii, 236.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

On the basis of 264 articles from the literature and his own experience the author discusses the biological reactions in tuberculosis, for the purpose of weighing their value in practical surgery. r. From agglutination no conclusions can be drawn either as to diagnosis or prognosis. The complement-fixation reaction is not specific, but according to Hammar it has some importance in diagnosis. Wright's opsonin determination is beyond doubt of importance in diagnosis, but on account of its great technical difficulties it cannot well be utilized in practice. Passive anaphylaxis and the meiostagmin reaction have thus far been of scientific interest only in the diagnosis of tuberculosis.

2. Among the tuberculin tests the subcutaneous reaction with old tuberculin has not entered into surgical practice. In spite of its specificity and the manifest local symptoms, especially in joint and kidney tuberculosis, it still has its limitations, contra-indications, and disadvantages. The danger of serious local reactions is almost entirely lacking in the so-called "anaphylactic reactions." The von Pirquet reaction, on account of its great sensitiveness, does not indicate whether the tubercular process is an active or a latent one, except in children. In adults a negative reaction indicates very strongly that surgical tuberculosis is not present. In the intracutaneous reaction, according to Engel, a negative result when large doses are used - up to 10 per cent solutions — always proves the absence of surgical tuberculosis. A positive result is to be judged as in the cutaneous reaction. The conjunctival test indicates a probability of surgical tuberculosis; a negative reaction must be judged with great reserve.

3. Animal experimentation gives excellent results: the guinea pig test is an ideal method of cultivating tubercle bacilli; if the animals get sick the pus, urine, etc., are tubercular. The question of the most suitable mode of infection and demonstration of the bacilli is not yet settled. A reliable method of quick diagnosis by means of animal experiments is also very much to be desired.

# Fraser, J.: The Etiology and Pathology of Bone and Joint Tuberculosis. J. Am. M. Ass., 1915, lxiv, 17. By Surg., Gynec. & Obst.

Fraser takes up the etiology of bone and joint tuberculosis by describing first the type of the bacillus which causes the disease, and, second, the route by which the germs arrive at the site of development. The type of bacillus may be of two important varieties,—the human and the bovine; but there are others of lesser importance—the avian and piscine varieties. He gives five tests by which human and bovine bacilli are differentiated.

1. The rapidity of growth on inspissated egg shows that the human variety grows more luxuriantly than the bovine.

2. A medium of egg and glycerine will grow the human type better than the bovine — the latter germ may not grow in this medium.

3. The shape of the bacilli was formerly a test, but is now considered useless; the long type was considered human, the short bovine, bacilli. The

nodular staining using Gram's modified stain will in the human variety show dark nodules, which are not apt to appear in the bovine type.

4. On a medium of bouillon and glycerine of a known acidity the human growth will increase the acidity, while the bovine decreases the acidity,

and alkalinity may develop.

5. In the inoculation test two rabbits are used, each being inoculated with a different type of bacillus. The one injected with the human type after six months showed a few tubercles in the lungs, the rabbit showing no ill effects during life. The other rabbit inoculated with the bovine type showed gradual cachexia, ending in death within six weeks.

By using such methods, Fraser has found that in a series of patients 62 per cent owed their disease to drinking milk infected with the bovine bacillus; while 38 per cent suffered from the human type. A family history of pulmonary tuberculosis was found in 71 per cent of those infected with the human bacilli.

The route of infection is from some tuberculous focus in the body, the infection being carried by the blood and lymph streams. The bacilli enter the joint via the nutrient or metpahyseal arteries.

The synovial membrane is first involved; as healthy bone cannot be infected, the marrow must first succumb to gelatinous degeneration, which is in turn produced by tuberculous toxemia and endarteritis of the arteries supplying the part. All this occurs before a tuberculous osteomyelitis develops.

The pathology will show involvement of any part of the bone, but the locality of infection depends on the situation of the reflection of the synovial

membrane.

If the synovial reflection is in relation to the epiphysis, then that portion is attacked. It is supposed that the focus of infection is begun by an infected blood-clot; a slight trauma may be the contributing cause. A follicle develops in the marrow which may soften and an "infiltrating tuberculosis" result, or the tubercle may become localized and an "encysted tuberculosis" result.

The changes in the marrow show two stages. In the early or cellular a phagocytic action of the white cells takes place until fibrosis results. The later or fibrous stage is characterized by an absence in fat corpuscles and more fibrous tissue, resulting in an encapsulated focus. The lamellar changes show a tuberculous process developing in the bone. The process may be of two types—one where the lamellæ are absorbed or osteoporosis results, the other where the lamelæ are increased in thickness by fibrous deposits. The periosteum shows either a deposit of dense or porous bone. The bloodvessels show a condition of endarteritis.

Fraser divides osseous tuberculosis into four varieties: (1) the encysted tuberculous lesion; (2) the infiltrating lesion; (3) the atrophic tuberculous lesion; and (4) the hypertrophic lesion.

J. H. Shaw.

Guye, G. A.: Local Reactions in the Heliotherapy of So-Called Surgical Tuberculosis (Les réactions de foyer dans l'héliothérapie des tuberculoses dites chirurgicales). Paris méd., 1914, iv, 615. By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The local reactions that appear under heliotherapy are: increase in volume in closed tuberculosis, localized sweating and rise of temperature over the focus, demonstrable change in consistency, and palpation that can be demonstrated on pulsation. In cases of fistulous tuberculosis there is generally a decrease in volume, there is more abundant secretion, which has a tendency to become hæmorrhagic-serous; and finally there is reddening and swelling

of the edges of the fistula.

As to the immediate effect of heliotherapy on joint function, it often grows worse at first on account of increased swelling, but almost immediately afterward there is an improvement — fibrous ankylosis. Among the symptoms noticed by the patient are: a circumscribed feeling of heat in the irradiated joint, decrease or cessation of pain; in abscesses sometimes a feeling of pulsation; in overdosage, an unpleasant or even painful feeling of tension. In order to avoid overdosage use is made of the thermometer and clinical observation.

The degree of the local reaction is dependent on different factors, such as general health. Advanced cases of tuberculosis often react with very pronounced rise of temperature, even when not the focus, but a different part of the body, is irradiated. The same may be said of foci in an acute stage of

development.

The depth and localization of the focus also influence the degree of the local reaction. Guye describes the therapeutic effects of this local reaction as follows: disappearance of pain, increase in mobility, retrogression of exudates, loosening of hard infiltrations, discharge of sequestra, etc., as has previously been described repeatedly by Rollier.

Overdosage may produce serious consequences, may even cause spreading and generalization of the tuberculosis. The local reaction is inflammatory in nature. It is very important that close watch be kept of the patient during the sunshine treatment. An effort is made to produce slight reactions. If success is not attained with the usual technique it is best to be satisfied with "distant irradiation"; that is, the focus itself is not exposed to the sunshine bath, but more or less of the rest of the body.

AMSTAD.

Bromley, L.: Tumor of the Upper Extremity of the Femur. Proc. Roy. Soc. Med., 1914, viii, Sect. Dis. Child., 5. By Surg., Gynec. & Obst.

Bromley reports a case of a patient, aged 12 years, who had noticed a swelling in the right thigh for seven or eight weeks. He complained of pain in the right leg, especially after walking; some days the pain was so severe that he was unable to walk. When the patient was 3 years old, he was said to

have fractured the right femur, since which time he had had intermittent pains of an aching character,

which had recently increased.

On examination a hard swelling of the upper third of the right femur was felt; there was no definite margin and no heat or tenderness, and movements at the hip-joint were free. Skiagraphic examination showed an endosteal growth of the femur.

An exploratory incision was made. The bone was found to be expanded and covered by normal periosteum; a thin layer of compact bone surrounded a mass of cartilage which had entirely replaced the medullary cavity. A portion removed for microscopic examination showed pure chondroma, and there was no suggestion of malignancy.

EDWARD L. CORNELL.

Berry, J.: Clinical Notes on Malignant Tumors of the Long Bones.

xxviii, 1.

Malignant Tumors
Internat. J. Surg., 1915,
By Surg., Gynec. & Obst.

This is a consideration of (1) osseous carcinoma by direct extension and as a secondary deposit, dwelling especially upon spontaneous or pathological fracture in these cases; and (2) primary sarcoma, both of the periosteal and the endosteal variety.

Sarcomata at the ends of the long bones are very likely to be mistaken for disease of the neighboring joint. The author reports a number of cases illustrative of the various types of malignant growth and considers the treatment, both surgical and palliative, at some length. H. W. Wilcox.

Knaggs, R. L., and Gruner, O. C.: A Contribution to the Study of Ossification in Sarcomata of Bone. Brit. J. Surg., 1914, ii, 366.

By Surg., Gynec. & Obst.

The author reports three cases of sarcoma of bone as follows:

r. In osteosarcoma of the humerus of eighteen months' duration in a woman of 43, an area of hard bone was found in the center surrounded by softer tissue with some patches of translucent gristly material. The lower half of the humerus was involved. Ossification progressed from hard areas growing in the softer mass. Spindle-shaped and round cells were numerous. In the area of ossification were found elongated cells with faintly-staining nuclei. They were neither connective-tissue cells nor osteoblasts, but were no doubt sarcomatous in nature, although differing from the ordinary spindle cells of sarcoma.

2. The second case was periosteal sarcoma of the ankle in a girl of 16, death resulting from pulmonary metastases. Sarcomatous tissue about half an inch thick surrounded the tibia. The predominating histologic elements were spindle cells. At the points of ossification some of the cells resembled bone-cells. There were some points where deposits of lime salts were seen around the sarcoma

cells.

3. The third case was myeloid sarcoma of the astragalus in a woman of 20. The structure was

a fine regular cancellous network, in which spindle cells predominated. Many giant cells were seen, but not in the same relation to the bone as osteoclasts.

In these three cases it is shown that ossification takes place in endosteal sarcomata and that the active element seems to be the sarcoma cell. The bone formation occurred independently of periosteum, which is contrary to the belief that ossification can occur only in periosteal or subperiosteal sarcomata.

W. A. Clark.

Brickner, W. M.: A Simple, Easily Regulable Method of Applying Abduction in the Treatment of Shoulder Disability. Med. Rec., 1915, lxxxvii, 15. By Surg., Gynec. & Obst.

The author describes his method of maintaining abduction of the shoulder and arm in cases of sprain and tears of the capsule and in those cases of subacromial bursitis which do not require operation. He states that in three successive cases of forward subluxation of the head of the humerus with extreme disability this treatment brought about a cure in two weeks. By this method, with the patient semirecumbent in bed, the arm is abducted as far as it can be comfortably, a muslin bandage is looped about the wrist, carried to the headpiece of the bed and fastened there. upper end of the bed is raised on blocks, and as the patient slides down in bed his arm travels, relatively, farther up. Many cases that have resisted efforts to forcibly abduct the arm yield painlessly to this gradual countertraction.

The method is not advised for recent fractures

or dislocations or for joint inflammation.

H. W. WILCOX.

Ridlon, J.: Coxa Vara. J. Am. M. Ass., 1915, lxiv, 219. By Surg., Gynec. & Obst.

Ridlon gives an account of Elmslie's views of coxa vara and particularly calls attention to his definition; i.e., that coxa vara is an anatomical term indicating the condition of depression of the neck of the femur together with a decrease in the angle of the femoral neck.

The signs he observes in coxa vara are adduction of the femur with eversion and also flexion in some cases, and diminution in abduction with shortening made apparent by elevation of the trochanter. Other conditions may reveal these signs, but a different deformity is present in the femoral neck.

Ridlon says he regards adduction with outward rotation and limitation of abduction and inward rotation as the first important signs of coxa vara. He also notices the fact that in many cases of coxa vara in children who are fat the boys take the feminine type and both sexes have underdeveloped sexual organs.

There are some forms of coxa vara due either to fracture of the neck of the femur with bad union or

to the action of disease in the joint.

Ridlon objects to calling fractures of the neck

epiphyseal separations, and other pathological conditions coxa vara, and says we cannot call coxa vara by such terms as adolescent or traumatic coxa vara, but that it should be called simply coxa vara.

The treatment which has brought the best results in Ridlon's experience has been strong traction with abduction of the limbs; at the same time a plaster cast is applied from the ankle to the nipples. The patient is allowed to lie down or walk as he so desires. After walking has been continued three or four months without pain, the treatment is discontinued. I. H. SHAW.

#### Steindler A.: Coxa Vara Adolescentium Traumatica. J. Am. M. Ass., 1915, lxiv, 216. By Surg., Gynec. & Obst.

The author confines himself to the coxa vara of adolescents in which a causative or contributory relation exists between trauma and deformity. Several classifications are given, and a review of the literature on the subject shows that trauma plays an important rôle in the etiology. Wullstein and Rammstedt's experiments are cited showing that separation of the epiphysis may be produced by direct trauma to the trochanter when the pelvis is fixed and the thigh in extension, the periosteum holding the head in place until later the body-weight loosens Steindler contends that a period between the ages of o and 16 exists, when trauma, major or lesser, may cause epiphyseal separation, with or without preëxisting or coexisting rickets, followed by a deformity known as coxa vara adolescentium.

Ten cases are cited and the following points

significant in diagnosis are cited:

1. Injury to the hip of moderate extent, fall or

- 2. An intermediate period of functional freedom.
- 3. No or very mild subjective symptoms.
- 4. The late and gradual development of the coxa vara deformity and disability.

5. The age of the patient. The value of the röntgen ray cannot be too highly considered, as the injury may be slight and no lesion show until later, as is the case in Kümmel's post-HENRY W. MEYERDING. traumatic kyphosis.

#### Rosenow, E. C.: Relation of Focal Infection to and the Bacteriology of Arthritis. Lancet-By Surg., Gynec. & Obst. Clin., 1915, cxiii, 32.

Rosenow has isolated streptococci from the joint fluid in nearly all of a series of twenty cases of typical rheumatic arthritis. The cocci resembled those described by Poynton and Payne and produced a similar arthritis in animals when injected soon after isolation. He believes that the facts warrant the conclusion that in rheumatism we are dealing with streptococi which differ from the more virulent hæmolytic forms. The chief objections to the infection theory are the failure to discover a typical picture in so many cases and the negative results of bacteriological examination of blood and of articular fluid exudates.

The author examined glands excised under strict aseptic conditions, from which inoculations were made, using chiefly tall columns of ascites-dextrose agar. In nearly all of a series of 64 cases of arthritis deformans thus examined organisms were found, although the cases ranged in duration from one to seventeen years. Several organisms were found in some glands; in no case were the streptococci hæmolytic for human blood, but they resembled streptococcus viridens, and showed anaërobic preferences in the primary cultures. In some cases identical organisms have been isolated from widely separated regions, as from the epitrochlear and femoral glands. Marked improvement has followed the use of autogenous vaccines from these glands. Examination of the periarticular structures shows complete plugging of the blood-vessels due to primary endothelial proliferation rather than to organized thrombi. These changes are believed to be primary rather than secondary, and it seems likely that the organisms are taken up from the circulation by the epithelial cells, which then proliferate freely, and thus cut off the blood supply, resulting in areas of diminished nutrition and oxygen tension, a condition favorable to the multiplication of anaërobic or-C. E. WELLS. ganisms.

#### Runnels, D. S.: Some Essential Points in the Etiology and Differential Diagnosis of Rheumatic Conditions and Neuritis. Clinique, Chicago, 1915, xxxvi, 5. By Surg., Gynec. & Obst. cago, 1915, xxxvi, 5.

This paper is largely an enumeration, with some discussion, of the conditions commonly dealt with

by physicians as rheumatic or rheumatism.

These conditions are listed by the author as auto-toxæmia, poisoning by lead, arsenic, etc., diabetes, thyroid or adrenal insufficiency, trichinosis due to indigestion of trichinæ in pork. Many chronic joint diseases are probably due to disturbed physiology resulting from malposition of the viscera; viz., visceroptosis. Other conditions are joint strain, tuberculosis, neuralgia, hysteria, neurasthenia, muscular overstrain, myositis, acute poliomyelitis, neuromyositis, ocular errors in refraction, gout, subacute combined degeneration of the spinal cord, ascending neuritis, intervertebral tumors, cervical pachymeningitis, cervical caries, malignant disease of the cervical vertebræ, spinal gliosis, neuromata, fibromata, "supernumerary" seventh cervical rib, enlarged glands in the axillæ aneurism of the subclavian artery, syphilis of the aorta, occupation neurosis, visceral disease or tumors in the pelvis, disease or tumors involving the sacral plexus, gonorrhœa, large fœcal accumulations in a displaced colon, and a few others.

Runnels discusses acute rheumatism by itself as a disease resembling those acute infections of which the infective agent is known. He says he believes that its true pathogenic agent has not been definitely isolated, but that these bacteria presumably those of typhoid, pneumonia, etc.-

are only secondary factors in complications.

He speaks of rheumatoid arthritis and reports a case in a child twelve years old. He says that lately the differentiation of chronic articular rheumatism and arthritis deformans has been given up; whether the disease is bacterial or a trophoneurosis the future must decide.

Neuralgia and muscular rheumatism are regarded as clinical entities by the author. He discusses at some length the pains caused by various intra-abdominal conditions and emphasizes the importance of distinguishing between organic affections of the abdominal viscera and true and other neuralgias and neuritis affecting the peripheral nerves at any point after leaving the spine.

He specifies two forms of visceroptosis likely to cause pains simulating rheumatism - congenital and acquired. The congenital form is due to malnutrition in early infancy, caused either by errors in diet or by constitutional disease. The acquired form is due to allowing the body to become too much emaciated either from habit or disease or the

assumption of incorrect posture.

He believes that not all patients suffering from pain in the sciatic distribution are cases of sciatica; the physician must satisfy himself that none of the above conditions exist. He advises that in all cases of neuralgic or neuritic pains the urine should be carefully examined, and that in all cases of rheumatic conditions the tonsils should be carefully inspected and removed if found diseased.

H. WINNETT ORR.

#### Allison, N., and Brooks, B.: Ankylosis: an Experimental Study. J. Am. M. Ass., 1915, lxiv, 391. By Surg., Gynec. & Obst.

The authors review the literature of ankylosis, calling attention to Hoffa's assertion that a bony ankylosis may be produced in two days, and to Nichol's and Richardson's classification of processes of bony ankylosis, namely: (1) osseous transformation of proliferative perichondrium, (2) osteoblastic growth, and (3) osseous transformation of fibrous They report some experiments of their own which were undertaken to study the changes in joint structures which take place during the process of ankylosis.

All these experiments were performed on the knee-joints of dogs. Eight were partial excisions of the joints, three were destruction of joint cartilage, two were injury to cartilage, and in seven, direct infections of joints were produced. In the partial excisions 0.5 cm. to 1 cm. of the bone-ends were

sawed off.

Complete bony ankylosis was not evident in these experiments until five to six months had elapsed. Previous to this there was fibrous ankylosis and as early as six days the opposed ends were united by fibrous exudate. After destruction of joint cartilage by curettage, union took place in a manner much the same as that after partial excision. In one of these cases actual bony union was not complete after eleven months.

In the direct infection experiments staphylococcus aureus and tuberculosis bacilli were injected. The joint changes were the same for both organisms. There was marked swelling, heat, and tenderness. Fibropurulent exudate produced adhesions resulting in diminution in the size of the joint cavity. Destruction of joint cartilage occurred as a result of absorption by granulations.

The process of bony ankylosis is summarized as follows: (1) union by granulation tissue, (2) union by dense fibrous tissue, (3) metaplasia of fibrous tissue into cartilage and finally into bone. The slow process of bony ankylosis explains why after arthroplasty a joint may be movable for some weeks but subsequently may become stiff. It also suggests that, clinically, fixation after arthroplasty must be continued for a long time to prevent deformity. W. A. CLARK.

#### Cone, S. M.: The Injection Treatment of Infected Joints. Am. J. Orth. Surg., 1915, xii, 502. By Surg., Gynec. & Obst.

For many years the author has been using a 5 per cent carbolic acid solution, followed by alcohol, for injection of infected joints. In some cases in which he desires adhesions to form he uses pure By experiments with rabbits he carbolic acid. found that 5 per cent carbolic acid causes a slight congestion at once, but ten days later no change is apparent.

Three cases of hydrops articuli were treated by this method with good results. Ten cases of gonorrhœal joints were all relieved, some requiring two or three injections. A case of staphylococcus infection of the elbow was cured in a week by one injection. In three cases of villous arthritis no good results were obtained. Syphilitic and tubercular joints seem to have been generally unresponsive to this treatment. W. A. CLARK.

#### Fields, S. O.: Subacromial Bursitis. N. Y. M. J., By Surg., Gynec. & Obst. 1915, ci, 163.

Since the appearance of Codman's paper on subacromial bursitis in 1006 more attention has been paid to diagnosis of affections in this region. It is now known that the subacromial is an extension of the subdeltoid bursa and not a separate sac, as it was formerly considered to be. It is doubtful whether direct trauma is an etiological factor, for the bursa is well protected; but indirect trauma from falls on the elbow or the extended arm is the cause in a great many cases. Excessive use of the arm in untrained individuals is another cause. Infection is also an important factor in the etiology. Cases sometimes occur after acute tonsillitis or acute gonorrhœal Pain, tenderness, and limitation of urethritis. motion are the principal symptoms.

The treatment generally recommended is immobilization with the arm in abduction. The author has adopted the plan of injecting the bursa with 2 to 4 ccm. of iodoform-glycerine emulsion. This brings almost instant relief from the pain. The arm is

put in a sling with the elbow supported. The sling is removed usually after three days, and by eighteen days the patient is usually able to return to work. W. A. CLARK.

Coenen, H.: Cancer of the Hand After a War Injury (Handkrebs als Spätfolge einer Kriegswunde). Berl. klin. Wchnschr., 1914, li, 1589. By Surg., Gynec. & Obst.

Coenen describes a case of cancer of the back of the hand developing in 1913 in a patient who had been wounded by the explosion of a bomb in 1866. Most cancers of the hand developing in old scars are on the back of the hand. Cancers may also develop from the chronic irritation caused by warts. Several such cases are cited.

Michael describes 64 cancers of the back of the hand and only 3 of the palm. Wounds of the hand are very frequent in war and they are generally of such a nature as to leave deep and extensive scars. The possibility of cancer as a late result of these scars is one of the things that must be reckoned with in considering war injuries.

Shipley, A. M., and Lynn, F. S.: Internal Derangements of the Knee-Joint. Maryland M. J., By Surg., Gynec. & Obst. 1915, lviii, 8.

The authors call attention to some of the peculiarities of the anatomy of the knee-joint which account for many of the derangements to which the joint is subject. The chief source of weakness is the reliance for strength entirely on ligaments, the arrangement of internal ligaments, and the false ligaments which consist of folds of synovia covering fat pads. These last are best seen in the supra- and infrapatellar pads, which are composed of fat and blood-vessels covered with synovial membrane and render the joint surfaces irregular, thus contributing to the liability to disease. They play a great part in inflammations and are the source of origin of foreign bodies, the so-called "joint-mice" formed by hypertrophic and sclerosing processes followed by constriction and ultimately by the separation C. E. Wells. of the sclerosed fringes.

#### FRACTURES AND DISLOCATIONS

Stern, W. G.: The Three Cardinal Clinical Signs of Fracture into or near Joints. J. Am. M. Ass., 1914, lxiii, 2122. By Surg., Gynec. & Obst. Ass., 1914, lxiii, 2122.

The author reports briefly a number of interesting cases, illustrated with radiographs, of partial or complete fracture previously not diagnosed as such, and draws the following conclusions:

Every suspected fracture should be röntgeno-

graphed.

Ninety per cent of all sprains coming for rönt-

genography or consultation are fractures.

When all the usual classical signs of fracture are lacking, the presence of localized bone tenderness, swelling, and bloody discoloration alone are diagnostic of fracture.

George I. Bauman.

Wildey, A. G.: Ununited Fractures Treated by Long-Axial Drilling. Brit. J. Surg., 1915, ii, 423. By Surg., Gynec. & Obst.

Wildey's operation for ununited fractures consists in thoroughly exposing and cleaning the ends of the fragments at the seat of fracture, refreshing them by removing the thinnest possible transverse section of bone that will insure a complete removal of all dense fibrous tissue, and drilling in the long axis of the shaft several channels in the indurated bone-ends. This produces an artificial porosity of the osseous tissue. The drill is made to penetrate the healthy bone; at the same time the medullary cavity, which may be found occluded, is made patent by longitudinal perforations. Apposition and immobility of the fragments are secured by mechanical means.

The above method, which has been employed in many cases of long-standing non-union, has not yet failed to produce an abundant callus. Gratifying results have been obtained where a previous and unsuccessful operation had so shortened the leg that any further removal of the indurated bone would have left functional disability. Lane's tech-R. O. RITTER. nique is followed.

Grant, A. R.: Advantages of External Plates in the Treatment of Complicated and Irreducible Fractures. Hahneman. Month., 1915, 1, 14. By Surg., Gynec. & Obst.

The author introduces a new external plate for all varieties of oblique, compound, and complicated fractures. He describes it as a modification of the Parkhill clamp. It consists of four screws four inches long with a thread that will not crack the bone and a bolt head so that a wrench key may quickly turn them into place; four flat horizontal leaves with a hole at one end of the vertical screws, each held to its respective place by two lock nuts; the whole being locked by a clamp gripping the horizontal leaves.

Grant's technique is as follows: After a wait of 3 to 6 days, the usual skin preparation is supplemented by an additional application of 3 per cent iodine. An incision is made over the fracture and reduction is accomplished, the bones being held with a Lowman clamp if necessary. He drills two, three, or four holes in the bone-ends, turns the vertical screws into the bone, adjusts the horizontal plates, sews the soft tissue as closely as possible with silkworm gut, and applies moist dressings. The stitches and leaves are removed at the end of two weeks. JAMES O. WALLACE.

Mauclaire: Symptoms, Diagnosis, and Treatment of Fractures of the Lower End of the Humerus (Symptomes, diagnostic, et traitement des fractures de l'extrémité inférieure de l'humérus). Rev. chir. belge et du nord de la France, 1914, xiv, 65.

By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

The author reports a case of fracture of the internal epicondyle, in which the line of fracture reached into the elbow-joint (trochlea). In connection with it he gives a detailed discussion of the findings in the form of fracture mentioned in the title. Differential diagnosis must be made from posterior and lateral dislocation of the ulna and spraining and solitary dislocation of the radius. He divides these fractures into (1) frequent: (a) supracondyloid, (b) fractures in T-, Y-, or V-shape, (c) internal oblique fractures, (d) external oblique fractures; (2) rare fractures: (a) condyloid fractures (b) trochlear fractures, (c) epitrochlear fractures, (d) epicondyloid fractures, (e) comminuted fractures, (f) separation of the epiphysis.

The röntgen picture is very important. The prognosis is in general good; possible complications are ankylosis, paralyses of nerves, osteomata,

cubitus, valgus and, more rarely, varus.

Supracondyloid fractures are treated by means of a plaster cast for 20 days, when slight movements are begun. In the other cases light massage is recommended from the first. Too strong massage produces hypertrophic callus, especially in children. If there is hypertrophic callus hemiresection may be undertaken. Embedded nerves are freed. In complete separation of the epiphysis accurate reposition is sufficient.

Grune.

#### Walker, J. B.: Femur Fractures: Statistics of End-Results. Am. J. Surg., 1914, xxviii, 449. By Surg., Gynec. & Obst.

The author states that when the studies which are now being made of fracture statistics are completed, it will mean that the most efficient treat-

ment will be demanded.

He believes that thoughtful surgeons are coming to the conclusion that the average results are very unsatisfactory, due to inefficient treatment, and that it is necessary to establish authoritative standards by which subsequent fracture work can be measured and compared.

General hospital records are notoriously inadequate, for end-results are seldom stated; patients are discharged as cured on leaving the hospital at the end of eight to ten weeks, always going away

on crutches.

The more carefully fracture patients are followed up the more astonished one is to learn how many patients are permanently more or less disabled and how rarely ideal functional results are secured.

In gathering statistics from histories in 340 fractured femurs collected from several hospitals, Walker found that the methods of treatment were very dilatory and most inefficient.

Among various statistics quoted is the following

from the Austrian Government:

Of 857 fractures of the femur, 153, or 17.8 per cent, recovered with only temporary disability; 99 had a loss of 9 to 19 per cent of their earning power; 120 a loss of 19 to 32 per cent; 134 a loss of 33 to 48 per cent; 330 a loss of over 50 per cent; and 38 per cent of all cases suffered a loss of 50 per cent earning power.

The author suggests the following rules for more efficient treatment:

1. Thorough reduction under anæsthesia.

2. Traction and countertraction immediately after reduction and of sufficient amount applied a sufficient length of time to secure correct fixation of fragments and anatomical position. Bad results are nearly always associated with angulation.

3. Radiograms must be systematically employed in all cases of fracture of the femur to control the

results of reduction.

4. Sufficient time for consolidation must be allowed before weight-bearing is undertaken.

5. Certain cases, where adequate reduction cannot be made, should be operated upon and immediate operation should be made, as statistics show better functional results in cases in which earlier operations were done than in cases where operations were secondary after failure in the other treatment. Operation is indicated in all fractures of the upper and lower thirds of the femur where the fragments are much displaced and in special fractures of the shaft.

In conclusion, he states that surgeons in selected cases of fracture of the femur are obtaining the same brilliant results after immediate operations that have been obtained in early operations for acute appendicitis and gastric and duodenal ulcers.

JAMES O. WALLACE.

# Peckham, F. E.: Fractures of Both Bones of the Leg. J. Am. M. Ass., 1915, lxiv, 308. By Surg., Gynec. & Obst.

Peckham believes that each fracture is a definite mechanical problem, and to secure definite knowledge of it two or more X-rays should be made. From these the procedure to be followed in reduction can be definitely determined. If there is swelling, the leg is put up in a pillow splint and elevated until

the swelling has disappeared.

The patient is then put on a Bradford frame with an upright for counterpressure at the asymmetry. A windlass attached at the end for traction is so arranged that traction may be applied to the uninjured leg also. The patient is completely anæsthetized. The foot and the ankle are bandaged to prevent swelling, sheet cotton being applied over both legs. A piece of thick felt is placed over the foot, and about this the traction straps are applied. Cross-bands, to support the leg, are placed at various points on the frame, one being placed directly under the fracture. Traction is applied until the surgeon believes end-to-end apposition of the fragments has been secured. X-ray pictures are then taken and examined. If the reduction is complete, the plaster bandage is applied. If the reduction is not complete, manipulation is continued until the desired result is obtained, as shown by X-ray pictures. When the plaster has set, pictures are again taken to show that the fragments have not slipped, and again in two weeks, and if necessary further manipulation is done.

The traction straps may be applied so as to give a pull on the inner or outer side of the foot, or an even pull on both sides.

The plaster is worn for a month. It is then bivalved and the posterior half worn for two weeks

Four cases are reported and the paper is illustrated by cuts showing the method of application of the plaster and X-ray plates of the cases.

ARCHER O'REILLY.

## Breton, P. le: An Unusual Case of Ununited Fracture of the Tibia Repaired by Bone-Grafting. Buffalo M. J., 1915, lxx, 344. By Surg., Gynec. & Obst.

LeBreton reports with adequate illustrations an interesting case in which a boy of seven was operated upon for an ununited fracture of the tibia just below the knee which had existed since he was three weeks old. The boy walked with a bad limp, weightbearing being entirely through the fibula and the ligaments of the knee. The fragments of the tibia were freely movable.

At operation the ends of the old fracture were exposed and chiseled out to receive the graft. old fragments could not be approximated, so a graft from the other tibia was fitted and held by kangaroo tendon and chromic catgut. Union was firm in eight weeks. Later an osteotomy was done lower down to correct the acquired bowleg. The final result was very good with shortening compensated for by a high shoe. H. WINNETT ORR.

### Cotton, F. J.: A New Type of Ankle Fracture. J. Am. M. Ass., 1915, lxiv, 318.

By Surg., Gynec. & Obst.

Cotton describes a fracture which, although not new, he considers has not been adequately described. The condition is one in which there is a fracture of both malleoli with a splitting away of a wedge, large or small, from the back surface of the tibia at the joint — a wedge that is displaced backward, carrying with it the posterior tibia astragaloid ligaments, with dislocation up and back of the foot. As a rule, the posterior tibial fracture is separate, although sometimes the internal malleolus is included with it in one piece that is split away in a spiral line. The fracture of both malleoli frequently causes this fracture to be confused with Pott's fracture, but the two conditions are quite different. Cotton has seen fifty-three of the fractures he describes in the last seven years, and during this time saw only one case in which a real posterior luxation accompanied a Pott's fracture.

If the condition is not recognized and properly treated, marked interference with the ankle-joint will result. A new joint must be formed between the tibia and the neck of the astragalus, resulting in limited dorsal flexion and lateral instability.

In fresh cases Cotton reduces the dislocation at once by forward traction with the muscles relaxed in moderate plantar flexion; after reduction, plaster is applied with the foot in maximum dorsal flexion. No weight should be borne on the foot for seven or eight weeks. In old cases Cotton operates. As a rule he makes an incision on the outer and inner sides, then, after dividing both malleoli above the joint level, he loosens up the whole joint and, if necessary, cuts out a fresh joint surface on the forepart of the tibia to slip the astragalus into. The results have been satisfactory.

Frank D. Dickson.

## Runyan, R. W.: Dislocation of the Semilunar Bone. Surg., Gynec. & Obst., 1915, xx, 6o. By Surg., Gynec. & Obst.

The series reported comprises all of the cases treated in Ancon Hospital in the past six years, during which period there have been approximately one hundred and twenty thousand admissions. All of the patients were males, ranging in age from twenty to fifty-four. Five of the dislocations were of the left wrist and three of the right. Half of them were due to falls upon the outstretched hand, while the others were the result of heavy blows upon the dorsum of the wrist. The dislocations were all anterior with the concave articular surface facing forward or downward. The combination of marked swelling, spasm, and prominences on both the anterior and posterior surfaces of the wrist, slight

silver-fork deformity, with no change in the position of the styloid processes, furnish sufficient data to

make a diagnosis, but should be confirmed by an

X-ray examination, both anteroposterior and lateral.

But 2 cases of the series were uncomplicated. In 2 cases there were fractures of the scaphoid, in 2 there were Colle's fractures — one of which was compound — one had a fracture of the ulnar styloid, and one had fractures of both the scaphoid and os magnum. Closed reduction was tried in the 7 simple cases and was successful in 3 instances.

The method of reduction consists of traction upon the hand and hyperextension of the wrist; and while counterpressure is made over the semilunar on the anterior surface of the wrist, the hand is brought over into complete flexion. Should this fail, it is necessary to make an anterior incision between the flexor tendons and either reduce or excise the dislocated bone. Of the 5 open operations, 2 were reductions and 3 were excisions.

Grouping the cases according to the method of treatment, there were 2 perfect results and 1 poor one in the closed reductions; of the 2 open reductions, I was fair and the other poor. The 3 excisions resulted very poorly in 2 instances, and only fair in the other.

## Jones, J. P.: Congenital Dislocations of the Hip. es, J. P.: Congestion, 32. Interst. M. J., 1915, xxii, 32. By Surg., Gynec. & Obst.

The author briefly reviews the history of congenital dislocations, and under etiology gives the three common hypotheses and briefly discusses them. He also discusses symptoms and diagnosis.

Under treatment he goes into early and late modes and then discusses fully G. G. Davis' treatment.

He dressed his cases in plaster of Paris casts from above the pelvis to below the knees. thigh is held in marked abduction and external rotation. The patient is then put on a Bradford frame elevated about two feet, allowing the leg and foot to drop over the edge of the frame, thus correcting external rotation and causing the head to produce pressure against the acetabular cavity.

The patient is made to walk after two months. being supported by an attendant. At the end of 4 to 6 months the cast is changed, and the abduction gradually corrected to the normal position in 18 months. The child is taught to walk in a rolling chair. Four cases treated in this manner are described and illustrated by a number of skiagraphs and photographs. JAMES O. WALLACE.

#### Starr, C. L.: Congenital Dislocation of the Hip. Canad. M. Ass. J., 1915, v, 26.

By Surg., Gynec. & Obst.

The author briefly gives the history, etiology, pathology, symptoms, diagnosis, and treatment of this interesting condition.

Until the past two decades practically nothing was done toward treatment of this deformity. At first, open operative methods were used by Hoffa, Paci, and Lorenz, who made a pathological study of the condition and developed the manipulative method.

The cause of this condition, which, according to Ledamaly, occurs only in the human fœtus, is due to mechanical pressure, the thighs being flexed and adducted in utero, making pressure on the posterior wall of the acetabulum, causing it to become ovoid instead of round; also a certain degree of twist or torsion in the neck of the femur takes place, permitting the neck of the femur to ride upon the anterior margin of the acetabulum, producing a leverage which tends to throw the head completely out of the socket.

The bony changes are a shallow, ovoid acetabulum, a twist in the head of the femur, the head of the femur being flattened; the capsular ligament is thickened and elongated; the ligamentum teres often disappears, and the adductor muscles are shortened.

The condition is recognized only when the child begins to walk with the characteristic waddle gait and lordosis of the spine. In double congenital dislocations the symptoms are more prominent.

The diagnosis is easy. The history, the gait, the looseness of the head of the femur, with a radio-

gram, make the diagnosis complete.

According to the author's experience, about 75 per cent of the cases under eight years of age can be reduced by manipulation, and a perfect anatomical and functional result obtained. In some 5 per cent operative reduction is necessary. The chief hindrances in his cases was due to a thickened and contracted condition of the capsule. He follows

a modified Lorenz method, using as little force as necessary to replace the head. The limb is put up in moderate abduction and inward rotation, avoiding the difficulty of overcoming the subsequent extreme rotation of the limb. The child is put upon its feet as soon as possible, and in two to three months the limb is brought down parallel with its The author has been able to anatomically fellow. cure 75 per cent of his cases and to get a good functional result in 10 per cent more, due to anterior transposition. Some 5 per cent have been subjected to operative interference with good results. The remaining cases have been unimproved or have resulted in ankylosis. C. C. CHATTERTON.

## SURGERY OF THE BONES, JOINTS, ETC.

Ashhurst, A. P. C.: Modern Bone and Joint Surgery. N. Y. M. J., 1915, ci, 185. By Surg., Gynec. & Obst.

In the last twenty years there has been a marked advance in bone surgery showing that excision of tuberculous joints and osteotomies for rachitis and coxalgia are unnecessary. The author considers that fractures should be treated by surgeons, and if sufficient reduction is impossible by manipulations open operation should be resorted to early.

Perfect anatomical relation is not always necessary for good functional results, except where fractures occur near or into a joint, but it is always preferable. In his opinion non-union and malunion are often due to improper treatment. Complete reduction followed by bone-plates, bonegrafts, or inlays will secure uniformly good results in nearly all cases of fracture. Proper osteogenesis is the primary requisite.

In the treatment of ankylosed joints, arthroplasty has supplanted excision. The interposition of fat and fascia is giving fairly uniform results and greater range of motion is acquired. Bone-transplantation has proved its value in Pott's disease. Bone inserts or inlays have given good results where bone tumors were removed. The author considers these methods applicable in practically all cases of bone pathology.

H. W. MALTBY.

## Wight, J. S.: An Operation for the Elongation of Bone. Am. J. Surg., 1915, xxix, 18.

By Surg., Gynec. & Obst.

Wight calls attention to the discrepancy of onehalf inch or so often existing in the length of the lower extremities. When an accident shortens the longer leg by an inch, it makes little difference; but the same amount of shortening in the shorter leg may cause quite a perceptible limp.

He submits a method which he used in one case. A femur fractured and healed with shortening and angular deformity was cut half-way across from opposite sides at points about two or three inches apart. Then the two incisions were connected by one running lengthwise of the bone. Then the leg was extended until the ends of the fragments just

overlapped and a screw was put in. There was good union, no trouble from the screw, and the patient walks without a limp.

H. WINNETT ORR.

Jacobs, C. M.: Observations on Bone-Transplantation (Albee Method) for the Cure of Tuberculous Spine Disease. J. Am. M. Ass., 1915, lxiv, 400. By Surg., Gynec. & Obst.

Bone-transplantation into the split spines of several contiguous vertebræ for the cure of Pott's disease is a valuable surgical asset. Surgery is used to better advantage here than in tuberculous joints elsewhere in the body; there is no danger of disseminating the infection into contiguous normal bone and there is no sacrifice of bone to effect shortening.

The author emphasizes the fact that he does not favor surgical measures in every case of tuberculous spine disease. The value of any plan of treatment in Pott's disease is estimated by its effectiveness in

combating ultimate deformity.

Under conservative treatment recovery may be anticipated in an average period of three or four years, with or without deformity, depending often on the region of the spine affected. In caries of the middle and upper dorsal region the spine is frequently associated with great angular protrusion; whereas caries in the cervical or lumbar region, even when extensive, has little or no kyphos. In childhood, therefore, routine treatment should be protective, except perhaps in middle and upper dorsal Pott's disease; but in cases in which conservative treatment has been tried and found wanting, surgical intervention is justifiable. In adults, operative measures depend on social and economic Patients in the leisure class are in a conditions. position to choose between conservative and operative treatment. On the other hand, the wage earner must regain health in the shortest possible time; therefore conservative treatment in his case demands a sacrifice justified only by a necessity which Jacobs believes no longer exists.

In the middle and upper dorsal region of the spine, where deformity has developed, necessitating a pronounced bending of the bone insert, the strain on the graft is greatest. Unless external support be given, following the post-operative period of recumbency, tracings of the spine will almost invariably show an increased, rounded kyphos. In lower dorsal or lumbar Pott's disease the graft is usually straight and the strain is mostly confined to its lower end. Here again it is necessary to use external support; otherwise the lower part of the graft may not remain firmly anchored, and then it stands out

prominently.

Jacobs gives the ultimate results of nine cases operated upon during the year 1913. His conclu-

sions are:

r. Surgical measures for tuberculous spine disease are a great improvement over conservative treatment, but should be restricted to selected cases. Undoubtedly they shorten the period of disability.

2. Not only may existing deformity be prevented from becoming exaggerated, but also deformity itself may be prevented by surgical measures.

3. Too early reliance cannot be placed on the strength of the bone-graft. It takes time for the splint to become securely fixed by permanent callus.

4. External support must not be disregarded for many months following the operation, otherwise

deformity may ultimately occur.

5. Even with post-operative protective treatment for a period of six or more months, the duration of treatment is much shorter than the average duration under non-operative methods.

6. Success of bone-transplantation for the cure of tuberculous spine disease depends on the proper implantation of the bone-splint into the diseased and normal contiguous vertebræ. Essential to the success is the careful protective after-treatment.

# Watson, C. G.: A Method of Amputation at the Ankle-Joint Which Leaves the Heel Intact. Brit. J. Surg., 1915, ii, 390.

By Surg., Gynec. & Obst.

The main principles of the operation are to leave the original walking surface of the heel intact and to preserve the malleoli; to amputate the foot in front of the os calcis, together with the astragalus; to remove the cartilaginous surfaces of the lower ends of the tibia and fibula and of the upper surface of the os calcis, and then to wedge the os calcis between the malleoli and pin it there with an excision pin driven through the heel — the pin to be removed in about a fortnight.

The following advantages are claimed:

1. The patient walks on the original heel-pad, which has been accustomed to carry weight and bear pressure.

2. A club-shaped stump is secured by the non-removal of the malleoli, which gives a firm hold to

the "uppers" of an ordinary boot.

3. The shortening of the limb is reduced to a minimum — about an inch on an average.

4. No expensive artificial apparatus is necessary. An ordinary boot can be worn — a great advantage to hospital patients — if the sole is stiffened with a sheet of metal and a block is provided for the toes.

5. Owing to the original heel-pad being left intact, weight can be borne on the stump at an early date without risk of pain or undue pressure. The method may be employed in lieu of Chopart's amputation, when this operation is possible, without risk of backward tilting of the os calcis from contraction of the tendo achillis. Less skin is required for the dorsal flap than in Chopart's amputation, and the stump is no less serviceable for walking.

Watson describes each step of the operation in detail and reports seven cases operated upon. In all these cases excellent results have been produced and the author believes that more serviceable stumps have been provided than could have been obtained

by Syme's or Pirogoff's amputations.

R. O. RITTER.

Henderson, M. S.: Resection of the Knee-Joint for Tuberculosis. J. Am. M. Ass., 1915, lxiv, 140. By Surg., Gynec. & Obst.

From his experience in the Mayo Clinic, Henderson concludes that while in tuberculosis of the knee conservative treatment should be tried for a reasonable length of time, in adults resection is usually the final solution. In this clinic they advise resection in all cases of proved tuberculosis of the knee, even if but slight destruction of the bone is revealed by the X-ray, because even when but little destruction is shown there is often complete destruction of the articular surfaces, and in none of the cases of this type has bony ankylosis been found on operation.

Previous to March, 1913, 67 cases were operated on with no operative mortality; of these, 37 were traced. The average age of the patient was 27 years, and the average duration of symptoms before operation was 8 years. Thirty-two cases were classed as cured, 2 returned for amputation, and

3 died subsequently from tuberculosis.

Henderson considers the preliminary treatment of great importance. He advises that the operation be done in the quiescent stage, as there is less pain, swelling, cedema, and later sinus formation if this rule is adhered to. Extension with rest in bed is probably the best method of quieting this condi-

tion

The Fergusson type of operation is used in the Mayo Clinic. A tourniquet is applied and removed before sewing up the wound. About one-half inch of bone is removed from the tibia and one-half to three-quarters of an inch from the femur, and the denuded surfaces are swabbed with iodine. If the patient's business requires much standing, the limb is fixed in 10° flexion; for those who sit most of the time 15° to 20° flexion is best. For fixing the bones a wire nail is driven up through the head of the tibia into the femur through a separate incision, the head being left projecting through the skin so that it can be removed in two to three weeks. Plaster is used in fixing the limb, the cast being removed in two weeks and a new one applied which is retained for six weeks to two months. Following this a stiff leg brace is used for from four months to a year depending upon the firmness of the ankylosis.

FRANK D. DICKSON.

MacAusland, W. R.: Ankylosis of the Elbow; Four Cases Treated by Arthroplasty. J. Am. M. Ass., 1915, lxiv, 312. By Surg., Gynec. & Obst.

MacAusland reviews extensively the literature of the treatment of ankylosis by arthroplasty. The first operation was by Quenn in 1902. Various methods have been used to separate the joint surfaces, including gauze, wax, and lanolin, ivory prosthesis, muscle-flaps, fat-flaps, and fascia. He gives a rather detailed review of the experimental work by Allison and Brooks on the use of transplants in arthroplasties. MacAusland believes that transplantation of fascia lata as used in his third and fourth cases is a procedure much more surgical in

appearance and, with development in technique, more satisfactory in final results than the use of prepared fascia or other membrane.

Four cases of arthroplasty for ankylosis of the

elbow are reported.

In the first case a long incision was made and a flap of fat and fascia was transplanted. Although there was some necrosis of the skin due to poor circulation, the result was good.

In the second operation the technique was similar to the first; in this case, also, there was some necro-

sis and sloughing. The function was good.

In the third case MacAusland used a piece of fascia lata. He describes the operation in detail and illustrates it fully with excellent cuts. A U-shaped incision was made by beginning on the lateral aspect three inches above the elbow-joint and passively over the olecranon. The ulnar nerve was dissected out. A cross incision was made crossing midway on the olecranon. The olecranon was sawed across and separated and the joint was broken open. With a saw and a shoemaker's rasp the lower end of the humerus was shaped as near like a normal humeral end as possible; a piece corresponding to the olecranon fossa was removed from the radius. These surfaces were made as smooth as possible. The condyles were covered with the fascial flap and the tissues sewed in place. Passive motion was begun on the fifth day. The functional result was ex-

The procedure and results in the fourth case were the same as in the third.

ARCHER O'REILLY.

Tubby, A. H.: Nearthrosis or Arthroplasty; Notes on Some Cases. Am. J. Orth. Surg., 1915, xiii, 379. By Surg., Gynec. & Obst.

Tubby gives a very complete and concise review of the subject of arthroplasty with a report of his results in a number of cases. He advises a very careful study of the case before attempting the operation. It had best not be done until growth is complete. The patient's stamina, physical condition, and occupation should be carefully considered. It must be absolutely made certain that the cause of the ankylosis is entirely in abeyance. A careful radiographic study should be made of each case. He reports seven cases with fairly encouraging results. He thinks passive motion should not be started for at least three weeks after operation, although active movements may be allowed earlier. GEORGE I. BAUMAN.

Lovett, R. W.: The Use of Silk Ligaments at the Ankle in Infantile Paralysis. Am. J. Orth. Surg., 1915, xiii, 415. By Surg., Gynec. & Obst.

The author reports 60 cases in which 79 operations were done at the Children's Hospital. The silks used were of various sizes from No. 12 to No. 18, and of various kinds, both twisted and braided. They were prepared by being boiled in water or by being dipped in bichloride or oxycyanide of mer-

cury, or paraffin. In the 79 operations there was infection in 11 cases in which the silk came out.

There were three different techniques used:

I. Periosteal insertion, in which the silk is guilted to the periosteum.

2. The open-bone method, in which the silk is

put through a hole drilled in the bone.

3. The subcutaneous bone method, in which the bone drill is driven directly through the skin without an incision at the desired location.

Loyett prefers the open-bone drill method because some of the cases in which the periosteal insertion method was used showed that the periosteum was

torn away from the bone.

The author's conclusions are that the silk ligament operation in cases of drop-foot from infantile paralysis is a useful operation attended by a good proportion of success; that a most rigid technique is necessary; and that prolonged fixation and support are necessary because the silk is not strong enough to hold up the foot itself, but serves as the core of a ligament which is the real supporting struc-LLOYD T. BROWN. fure.

#### ORTHOPEDICS IN GENERAL

Taylor, H. L.: Tuberculosis in Relation to Deformities and Their Prevention. Post-Graduate, By Surg., Gynec. & Obst. 1915, XXX, 21.

Taylor emphasizes the importance of preventing deformities in tuberculosis of bones and joints. This is accomplished (1) by preventing the infection and (2) by combating or eliminating the deforming factors.

Since a considerable portion of tuberculosis in children is of the bovine type, it is evident that there should be a more strict control of herds, dairies, and milk products.

Segregation of advanced cases of phthisis and disinfection of all tuberculous sputum is advocated.

By improving vigor and vital efficiency through

better hygiene, infection is combated.

The prevention of deformities in bone and joint tuberculosis depends upon an early, accurate diagnosis and the careful planning and intelligent management of the treatment.

Fixation should be in the position of choice and

the patient's activity should be limited.

Operative interference is more frequently indicated in adults than in children. The object in operative work is either to remove diseased tissue, to fix the parts, or both.

Terminal deformities of the extremities, whether in children or adults, may be satisfactorily corrected by safe and comparatively simple operations.

R. B. COFIELD.

#### Gill, J. M.: Infantile Paralysis. Med. J. Austral., By Surg., Gynec. & Obst. 1915, ii, 4.

The author reviews the pathological findings and discusses the symptoms noted in non-fatal cases of infantile paralysis.

He states that infantile paralysis may affect any part of the nervous system, but it has a tendency to affect the anterior cornua of the spinal cord, and there is a question whether the peripheral nerves are affected or not.

He reviews the findings in detail of the Scandinavian physicians, Harbitz and Scheele, and describes certain common symptoms found in this disease and discusses their mode of production.

- I. Where there is a tenderness of the muscles. there are two theories as to the cause: (1) peripheral neuritis, (2) involvement of nerve-roots in the meningitic process and invasions of the tracts conveying painful impulse to the spinal cord. Neither of these he believes to be a satisfactory explanation, but he favors the theory of peripheral neuritis.
- 2. Where the paralysis is partly spastic and partly flaccid he believes the explanation to be simple and entirely satisfactory, that this phenomena is due to an incomplete transverse lesion of the cord, the disease affecting the lateral columns of the cord, as well as the anterior, though to a lesser extent, the paralysis becoming purely a flaccid type when the inflammation in the cord has partially cleared. This was first and accurately described by Wickman. Another explanation given by Hughlings Jackson is that the cerebellum exercises a continuous influence on the muscles. When the lateral columns are injured, the tonic influence asserts itself, but under normal conditions it is kept in check by corresponding impulses of the cerebrum, which have a restraining effect.
- 3. The exact meaning of the symptom of retraction of the head is doubtful. It is generally looked upon as a sign of meningitis when it affects the posterior cerebral fossa. It is thought that this position of the neck makes room for any accumulation of fluid in a posterior fossa; but this does not explain its cause in infantile paralysis and other diseases of childhood.

He believes retraction of the head is best explained by the hypothesis of Hughlings Jackson, published in 1871, which is, in brief, that Jackson believes that the cerebrum represents movements in the order of the arm, leg, trunk, while the cerebellum represents them in the order of the trunk, leg, arm, and the cerebral influence is dominant in the cerebellar extension, so that when the influence of one is removed the other is dominant. Applying this theory to infantile paralysis, he supposes that the cortical structure or the highest levels in both the cerebrum and the cerebellum are very apt to be affected by this disease; that the cerebral paralysis is manifested by coma and convulsions, while the cerebellar paralysis is revealed by retraction of the neck and rigidity of the limbs; also that the order of paralysis is the same as in cerebellar paralysis, the trunk predominating. The cerebellar influence on the trunk is maximal, while the cerebral influence is minimal; hence in the paralysis of both rigidity is dominant. He believes that the theory is correct and that the only alternative theory is that the head retraction is due to meningeal irritation. He reports three cases illustrating the points under discussion.

C. C. CHATTERTON.

MacKenzie, W.: The Treatment of Infantile Paralysis: a Study in Biology. Brit. M. J., 1915, i, 60. By Surg., Gynec. & Obst.

In an optimistic paper MacKenzie calls attention to the fact that too often cases are given up as hopeless on the ground that "irreparable damage" has been done to the cells in the anterior cornua. He emphasizes strongly the teaching of Owen Thomas and, in our day, Robert Jones that "surgical rest" should be given these paralyzed muscles. Great benefit will result from this treatment of the muscle in conjunction with training, massage, etc., of the paralyzed group. He says the erect position in the human ultimately depends upon one muscle - the quadriceps — and is lost if that muscle fails. The ourang in walking balances by means of the We have advanced farther and are able when standing to elevate the hand above the head. These functions come last and go easily and are the hardest hit in infantile paralysis. The treatment of the muscle is all-essential in the disease. Instead of waiting for a chance recovery in the cornual cells and treating in a perfunctory way the muscles with massage and electricity, it must be recognized that every affected muscle will work, provided that a commencement be made at zero. An affected limb will retain its heat and show little waste provided it be rested and worked within physiological limitations. Work must not be done for the muscle; it must itself do the work. M. S. HENDERSON.

Amesse, J. W.: Epidemiology of Poliomyelitis. Colo. Med., 1915, xii, 17. By Surg., Gynec. & Obst.

Amesse reviews the subject of poliomyelitis especially in regard to its epidemic character. It was first recorded in 1841 and has been well established by the reports of many authors. The specific organism has been isolated in pure culture, and reports of early investigators have been confirmed by the work of the Rockefeller Institute. The disease has been transmitted experimentally in animals, and epidemics of poliomyelitis in dogs, horses, sheep, etc., have been reported.

All methods of transmission of the disease are as yet unknown. Experimentally the stable-fly and bedbug have been shown to be carriers of the virus, but this work has not been confirmed. By far the most important factor is the direct infection from human beings. The upper respiratory tract has been shown to be the point of ingress and egress of the virus, and the discharge from the nasopharyngeal mucosa and the intestines have been proved infectious. The virus may remain active for months after the acute stages of the disease have passed and the affected organisms may be carried in healthy throats and transmitted to others. Eighty to ninety per cent of those infected are under six years

of age, but no age is exempt. The male sex is affected more frequently than the female. The disease is usually found in the temperate zone, and is propagated readily during the summer and autumn. It affects all races and may be found amid the best and worst hygienic conditions.

DEFOREST P. WILLARD.

Whitman, R. C.: Pathology of Acute Anterior Poliomyelitis. Colo. Med., 1915, xii, 20. By Surg., Gynec. & Obst.

The pathological picture in poliomyelitis is that of rapidly developing diffuse inflammatory infiltration of the pia and cord, which is most marked in the most vascular portions; that is, the anterior horn-cells. It may also involve a large portion of the brain, the intervertebral ganglia, and the peripheral nerves. The exudate consists mainly of lymphocytes. This exudate is gradually absorbed. but is usually followed by areas of parenchymatous degeneration which are apt to be confined to the anterior horn. The muscles which are permanently paralyzed undergo very rapid and extensive degeneration, so rapid and so complete as to be unexplainable, as the result of simple disuse. The wasting of the muscles may be partly masked by an overgrowth of fat and connective tissue. Ultimately, deformities of various sorts may develop as the result of the action of the opposed muscles.

DEFOREST P. WILLARD.

Gengenbach, F. P.: Clinical Aspects and Early Treatment of Acute Anterior Poliomyelitis. Colo. Med., 1915, xii, 21. By Surg., Gynec. & Obst.

According to Gengenbach's classification there are eight distinct types of acute anterior poliomyeli-

tis, the four most important being:

1. The spinal type—the ordinary form—beginning with fever, headache, gastro-intestinal disturbance, pain in the spine and extremities, and signs of nervous irritability. The symptoms usually persist from one to five days and with the suggestions of fever the effects of the paralysis become apparent.

2. The abortive type, in which the onset is similar to that of the spinal type but less severe in character and there is no apparent residual paraly-

SIS.

3. Progressive paralysis, beginning usually in the lower limbs and extending upward.

4. The bulbar type, in which there is paralysis of the cranial nerves whose nuclei lie in the medulla

and pons.

After the subsidence of the acute stage the paralysis remains. It is of the flaccid type and reaches a maximum in a few days. It involves the muscles of one or both lower limbs, the upper limbs, and the muscles of the back. During the next two or three weeks the paralytic symptoms subside gradually. At the end of a month the remaining paralysis represents the actual damage of the parts affected, although much may still be accomplished

by suitable treatment. The final effects are represented by muscular atrophy, loss of subcutaneous fat, deformities due to overpowering of the paralyzed muscles by their antagonistic unparalyzed muscles, flail-like joints, and the occasional shortening of a limb

Poliomyelitis may occur sporadically or as an epidemic. It is usually seen in the summer months. The period of greatest susceptibility is during the first two or three years of life. Owing to the nature of its onset it may easily be mistaken for the ordinary gastro-intestinal disturbances of childhood or any of the other acute infections. Early lumbar puncture will prove helpful in making differential diagnosis. During the first few days the spinal fluid is increased in quantity, is opalescent, and shows an increase in the number of lymphocytes.

The physician should be very guarded in his prognosis, as it is not always possible to judge the probable amount of residual paralysis from the severity of the onset. The mortality varies from 7 to 20 per cent in epidemics, while about 25 per cent of the cases make complete recoveries.

The same precautions should be taken as for any infectious or contagious disease: rigid quarantine should be instituted for at least three weeks and subsequent house disinfection resorted to.

The treatment includes the usual medicinal and dietetic measures for any acute infection. In addition, absolute rest in bed should be required, with the protection of the sensitive parts and administration of 2 to 10 grs. of urotropine several times a day.

The patient should be kept in bed, as quiet as possible, for at least a month. As soon as the condition is recognized the affected limbs should be

kept in as normal a position as possible by means of some retention apparatus. Not until the expiration of at least a month, or in any event until all tenderness has ceased definitely, is the massage, electricity, and muscle-training instituted.

DEFOREST P. WILLARD.

Geist, E.: Supernumerary Bones of the Feet; a Röntgen Study of the Feet of One Hundred Individuals. Am. J. Orth. Surg., 1915, xiii, 403. By Surg., Gynec. & Obst.

The author divides the supernumerary bones of the feet into two groups: those which are important and those which are comparatively unimportant.

In the first group he includes (1) the os trigonum, (2) the os tibiale externum, (3) the os peroneale, and (4) the os vesalii.

In the unimportant group are placed (1) the secondary os calcis, (2) the os intermetatarsale, and (3) the os intercuneiforme.

He then gives a good description of these bones and draws the following conclusions:

r. That the findings of his X-ray studies of the feet of one hundred individuals about confirm the findings of Dwight and Pfitzner.

2. It is of extreme importance that the frequency of occurrence of these accessory bones be recognized by the surgeon, as they not only have an academic interest to the anatomist, but a knowledge of them is of vital importance to one who is engaged in

3. That these accessory bones occur just about as frequently unilaterally as bilaterally is an important fact not to be lost sight of by those engaged in röntgen ray work and others.

the surgery of the extremities.

LLOYD T. BROWN.

## SURGERY OF THE SPINAL COLUMN AND CORD

Funk, V. A.: Dermoid Cysts of the Sacrococcygeal Region. Interst. M. J., 1915, xxii, 53. By Surg., Gynec. & Obst.

Dermoids are congenital cystic tumors. The simplest are globular sacs lined with dermal cells, from which hair may grow and be shed to later work its way to the surface, forming a sinus, which usually persists for some time. Sequestration dermoids are most frequent in the sacrococcygeal region, and may be mistaken for spina bifida. Those anterior to the sacrum — post-rectal are rare and frequently contain teeth. They are often not found until puberty. A swelling appears, becomes painful, breaks or is lanced with a resulting sinus. This condition must be differentiated from fistula in ano or a tuberculous sinus. The prognosis depends upon how early they are seen and on the treatment, which is complete excision. Funk reports two cases which received permanent cure by complete resection of the sac and sinuses.

C. A. STONE.

Sherman, H. M., and McChesney, G. J.: Bone-Splinting in Vertebral Tuberculosis. Calif. St. J. Med., 1914, xii, 485. By Surg., Gynec. & Obst.

Hibbs and Albee promulgated two splendid methods of repair of tuberculosis in the vertebræ. Results from external supports usually proved unsatisfactory. The author considers a brace that is invisible, impalpable, imponderable, indestructible, and innocuous, to be the ideal brace; he considers the results of the Hibbs and Albee operations come nearest to his ideals, considering bone as a living tissue, and when its pathology ceases repair being inaugurated at once. The stimulation of osteogenesis induces rigidity and strength, but no encroachment is made during the operations upon the diseased area. The Hibbs operation uses all of the vertebra posterior to the articular processes, the lamina and spinous processes being used to secure osseous contact with the vertebra below. Greater surgical attack is necessary in this operation.

The Albee operation makes use of the spinous process only, splitting it from tip to base and incorporating a bone-splint removed from a tibial shaft. Selective cases and spinal regions were selected for each operation: the Hibbs operation for the dorsal, the Albee for cervical, dorsolumbar,

and sacral regions.

The operations being considered from a mechanical standpoint, the articular processes being the fulcrum, the Albee operation gives a body of bone posterior to the articular surfaces, hence greater leverage. A selection of either is suggested for every case; followed by prolonged after-treatment, there is everything to gain and nothing to lose by operation. Results of operation on twenty-five patients show fairly definite results in seven; results of the others varying between fair and no results.

H. W. Maltby.

Farrell, B. P.: Hibbs' Osteoplastic Operation for Pott's Disease. J. Am. M. Ass., 1915, lxiv, 398.

By Surg., Gynec. & Obst.

The idea of fixation as a cure is suggested by the natural process of ankylosis which is seen in studies of the healed kyphosis. The question is to determine the best method of causing such an ankylosis artificially, thus accomplishing in a few weeks the result obtained by nature in months or From studies on the cadaver, Hibbs, in 1010, devised the following method: Longitudinal incision is made over the spinous processes and the periosteum laid back on each side from the spinous processes and lamina. The spinous processes are then partially fractured and each turned down so that the tip of one comes in contact with the fractured base of the one below. A chip of bone elevated from each lamina is used to bridge the space between the laminæ. It has been found that there is an adequate amount of real bone at all ages and that transplants from other regions are unnecessary.

Nearly 200 cases have been treated by this method

at the New York Orthopedic Hospital. The ages of the patients ranged from eighteen months to forty-one years, and the duration of the disease from four weeks to thirteen years. Of the series, 12 had psoas abscesses and 40 had increased reflexes; the number of vertebræ fused was from 5 to 14; 7 died from extrinsic causes, 4 were reoperated upon because an insufficient number of vertebræ had been fused. Of the others, in all except 3 cases which were paralyzed when they came to the hospital, all symptons of Pott's disease have disappeared. Autopsy on 2 cases showed complete fusion of the spinous processes and laminæ. W. A. Clark.

Collins, J., and Marks, H. E.: The Early Diagnosis of Spinal Cord Tumors. Am. J. M. Sc., 1915, cxlix, 103. By Surg., Gynec. & Obst.

The authors report two cases of extramedullary tumor of the spinal cord, each presenting an atypical symptomatology, followed by a discussion of the

early diagnosis of the disease.

The classical sequence of symptoms has been proved from the report of a number of cases during recent years to be far from uniform. Pain has been especially insisted upon as an early symptom. Of the two cases reported by these authors, in one pain was entirely absent, and in the second it was slight. Other subjective sensory disturbances, such as paræsthesia and hyperæsthesia, have been found to be rare. Pain also often does not correspond to the segmental localization of the tumor.

The authors consider that the essential element in the diagnosis is the fact of a gradually progressive motor and sensory spinal paralysis, the upper pole of which varies slightly, if at all. In every case of so-called transverse myelitis the possibility of tumor of the cord should be considered. It is to be hoped that the day will soon come when exploratory laminectomy will be undertaken as readily as an exploratory laparotomy.

H. W. WILCOX.

## SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Brenizer, A. G.: Keloid Formation in the Negro. Ann. Surg., Phila., 1915, lxi, 83.

By Surg., Gynec. & Obst.

These lesions are frequently observed in tuberculous cervical adenitis where glands have broken down or have been excised and in wounds healing by granulation. They may occur, however, after a minimum injury, such as piercing of the ear-lobe. The neck and chest seem to be sites of predilection.

The association of keloid and tuberculosis has been noted by many and defended by some. Although the negro is susceptible to both tuberculosis and keloid, although keloid may develop on tuberculous lesions, and although the neck and chest are common sites, Brenizer challenges this view. That keloid may be limited to only part of a scar, perhaps

a very small portion, argues against a mere fertility of the field for bacterial growth. The author believes the condition to be a tumor, a fibroma of the skin arising from the connective tissue of the derma. The cause is still obscure. Speculating upon the causation of tumors, the author states that the underlying factor in tumor growth is the loss of an inhibitory influence, possibly by irritation. This argument is applied to the development of keloid. That keloid is more common in the negro than the Caucasian may be attributable in part to instability in equilibrium in growth, as shown by the relative frequency of congenital malformations in the negro. His "inhibitory substance" is weaker, and therefore lesser irritations may result in cellular overgrowth.

T. W. HARMER.

### MISCELLANEOUS

## CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSES, ETC.

Moullin, C. M.: The Cancer Problem. Ann. Surg., Phila., 1915, lxi, 1. By Surg., Gynec. & Obst.

The author first raises the question, "Is there such a thing as cancer?" He then states that it cannot be separated from other tumors; that is, there are borderline cases between "cancer" and sarcoma, and again between malignant and benign tumors.

The start of all tumors is from apparently normal These develop in an apparently normal manner up to a certain state, when further development is arrested. Increase takes place, but the cells never advance or do any work. If the arrest of development occurs when the cells are highly specialized, further growth is slow and the tumor is benign. If the arrest of development occurs when the cells are embryonic in character, further growth is rapid and the tumor is malignant. Such cells are capable of transplantation through blood or lymph channels. Purposeful growth is controlled by heredity. When this force fails, purposeless multiplication takes place and tumor results. Failure of the force may be due to age, disuse, injuries which interfere with normal tissue construction, and arrested development of organs or tissues from freaks of nature or from artificial causes, such as chemical or physical agents: viz., arsenic, soot, tar, aniline colors, cobalt, X-ray. Perhaps noxious substances may be elaborated in the body producing similar results. This may account for predisposition in families. In some families heredity, that factor which directs and controls growth, is so strong that growth is never allowed undue license. In others the power is weaker and liable to fail, and growth becomes rampant. There are therefore two factors working together; one is arrest or weakening of the power of development; the other is local irritation. Masses of cells which never attain perfect form result and increase with a rapidity dependent upon the stage at which their development was checked.

T. W. HARMER.

#### SERA, VACCINES, AND FERMENTS

Kohlhardt, H.: Effect of Abderhalden's Cancer Serum (Über die Wirkung des Abderhaldenschen Krebsserums). Fermentforsch., 1914, i, 76. By Surg., Gynec. & Obst.

The fact that the body itself forms defensive ferments against pathological conditions would lead to the conclusion that such ferments could be used therapeutically. Abderhalden and Lunckenbein had already performed experiments in injecting fluid from cancers directly into the animal; this method, however, was not without danger. Abderhalden has now adopted the method of produc-

ing protective ferments in the body of another animal and then injecting the serum obtained into the cancerous individual. He has had success in inducing the disappearance of the tumor in ten rats. In this article four cases of the use of the serum in human patients are reported. The effect of the serum is highly specific, so it is best to use for the original injection a part of the extirpated tumor or its metastases. Where this is not possible the serum of the tumor patient is used. The "antiserum" when obtained is tested for its katabolic effect on cancer tissue.

The first patient was a man of 62 in an advanced stage of stomach cancer. It was thought that he would soon die. On February 28, 20 ccm. of carcinoma serum were given, no unpleasant effects resulting; March 3, 30 ccm. given; appetite and sleep improved, ædema decreased; further injections of 10 ccm. each given were April 8, 15, 18, 20, 23, 24, 25, and 27. A remarkable increase in weight and general health followed and all clinical symptoms soon disappeared. The case is not regarded as cured, for the patient's serum still katabolizes cancer tissue, but he is so far cured clinically as to be able to continue his work.

The second case was a woman of 51, in an advanced stage of cachexia. She had a tumor in the left half of the abdomen as large as child's head; there was infiltration of the descending mesocolon. Radical operation was impossible, and long continued treatment with radium, mesothorium, and röntgen rays was ineffective. Ten ccm. of carcinoma serum were given on July 2, 3, 4, 5, 6, 8, 9, 10, 11, and 12. The general symptoms improved in a remarkable way after the first injection. Vomiting stopped, appetite and strength increased, and the pulse fell from 120 or 130 to 80 or 90 after the second injection. Local symptoms improved and the tumor decreased in size.

In addition to these two cases of clinical recovery the author reports two further cases that ended in death; they were in such extremely bad condition when treatment was begun that any other ending was hardly to be expected. However, the microscopic examination of the tumors showed such a marked effect of the treatment on the tumor tissue that he regards them as even more conclusive of the good effect of the treatment than the clinical cases. A detailed report of the microscopic findings will be given in a later paper.

There were no bad effects, and in less advanced cases he feels that there would have been great hopes of recovery. Anaphylaxis may be produced, but he has never seen it to a serious degree. It may be avoided by not interrupting the series of injections, or, if it becomes necessary to interrupt them, they should be resumed with serum obtained from a different species of animal.

A. Goss.

Otto, R., and Blumenthal, G.: Experience with Abderhalden's Dialysis (Erfahrungen mit dem Abderhaldenschen Dialysierverfahren). Deutsche med. Wchnschr., 1914, xl, 1836.

By Surg., Gynec. & Obst.

The authors describe a series of Abderhalden tests with the sera of 30 pregnant individuals and 40 nonpregnant ones, men and women. The non-pregnant ones included 13 carcinoma patients, 22 with other diseases, such as syphilis, metasyphilis, skin diseases, tuberculosis, pyosalpinx, myoma, ovarian tumors, etc., and 4 normal individuals. They conclude that a negative reaction almost certainly excludes pregnancy, and that while the sera of pregnant women almost always katabolize placenta, this has only a limited diagnostic value, because other sera, especially those of patients with carcinoma, also give a positive ninhydrin reaction with placenta.

The serum of men with dementia præcox gives a positive reaction always with tests, often with brain, but often also with placenta. Testes were also katabolized by sera of patients with other diseases and by the sera of pregnant women. Specificity of the so-called protective ferments in the sense claimed by Abderhalden could not be

demonstrated.

Oeller, H., and Stephan, R.: Criticism of the Protective Ferment Reaction (Kritik des Dialysierverfahrens und der Abwehrfermentreaktion). Deutsche med. Wchnschr., 1914, xl, 1557. By Surg., Gynec. & Obst.

Oeller and Stephan tested the possibility of making a clinical diagnosis of tumor by the Abderhalden reaction and found that it was impossible; they then tested it in pregnancy, adhering strictly in all cases to Abderhalden's directions. They examined sera from 100 pregnant and non-pregnant individuals, the non-pregnant ones being mostly men. They found that "protective ferments" could be demonstrated in the sera of many normal men. Almost every serum, no matter what its source, katabolized heated placental tissue. They found also that the effect of the protective ferment was dependent on its concentration in the serum. If the ferment content of a serum reached a certain concentration, it digested proteins coagulated by heat without any specific distinctions.

They think the dogmatic statements laid down by many authors with regard to the results of the method are premature, and that while, under certain conditions, dialysis may give biologically correct results, the clinical results thus far obtained should be rejected and the method worked out completely along new lines. A. Goss.

Münzer, A.: The Limitations of Organotherapy (Die Grenzen der Organotherapie). Berl. klin. Wchnschr . 1914, li, 1812. By Surg., Gynec. & Obst.

Organotherapy has yielded such excellent results in myxœdema and cretinism because in them we have to deal simply with a hypofunction of a certain gland; this insufficient function being compensated for, normal conditions result. But in most diseases the condition is much more complex; it is not a question of excess or insufficiency of function, but of disordered function, so that the gland does not discharge into the blood its normal secretion either in too small or too large amount, but a substance that is entirely foreign to the blood. The administration of gland tissue only results in a greater amount of this foreign product being dis-

charged into the circulation.

The primary pathological condition is not in the gland itself, but in some other gland or possibly in the nervous system. As the ductless glands act to a certain degree as antagonists and maintain a normal balance in the body, it is possible in some cases of hyperfunction to administer the secretion of an antagonistic gland; for instance, in acromegaly, which is due to hyperfunction of the hypophysis, the administration of thyroid and genital glands may be of value. But the only true organotherapy consists in the transplantation of a sound organ in the place of the diseased one. The giving of a preparation from a dead organ is only a makeshift. A. Goss.

#### BLOOD

Youland, W. E.: The Protective Value of Aqueous Extract (Hiss) of Leucocytes in Acute Infections in Animals. J. Med. Research, 1915, xxxi, By Surg., Gynec. & Obst.

Youland has attempted to confirm the presence of protective substances in leucocyte extract with a view of extending the use of such an agent in the combating of bacterial infections. Experiments were carried out upon rabbits and guinea pigs, staphylococcus, pneumococcus, and streptococcus being made use of in the experiments. It was found that in none of these experiments was absolute protection obtained. In one or two there was a slight prolongation of life, but not sufficient to indicate a distinctive action. In one experiment with a mild infection of staphylococcus there was a conservation of weight. While a decided influence on the temperature was noted in some of the test animals, this is of little significance, as all of the animals succumbed. With more severe infection none of these reactions occurred.

The infecting doses in these experiments were severe, but the extract was often given in large amounts. While these results do not negate those of Hiss, when considered together they are of some significance. The difficulty of determining the value of a protective substance under such unequal test conditions is well shown. The fact that leucocyte extract cannot be prepared uniformly offers another source of difficulty. The fact that the nucleins present in these extracts have a certain influence in these infections must also be considered. These facts render borderline infections in susceptible animals like the rabbit all the more unsuitable for such a determination. For these reasons more weight, perhaps, may be given the results of the present work. The possibility of leucocytes containing neutralizing substances within the meaning of immunity is remote. Leucocyte extract apparently exerts its action upon animal infections only in the borderline type of infection, and is without curative value in more constant conditions.

GEORGE E. BEILBY.

Jeger, E., and Wohlgemuth, J.: A New Method of Controlling Hæmorrhage of Parenchymatous Organs (Eine neue Methode zur Stillung parenchymatöser Blutungen). Arch. f. klin. Chir., 1914, cvi, 194. By Surg., Gynec. & Obst.

Jeger and Wohlgemuth point out the disadvantages of various previous methods of stopping hæmorrhage in parenchymatous organs. The blood flows in such a broad stream that there are no contact surfaces to aid in producing coagulation. the blood is divided into small streams by some fibrous substance interposed, coagulation takes place much more readily. This may be accomplished by means of gauze, but the gauze tampon remains as a foreign body. They have devised an absorbable tampon. It is prepared from a delicate membrane taken from the intestines of sheep and cattle. This is frozen into a solid mass and then cut up in a machine resembling a microtome, so that it is divided into very fine fibers. This is sterilized by keeping it three days in five per cent carbolic acid solution, and then washed repeatedly with 70 per cent alcohol. When needed it is taken out of the alcohol and washed in salt solution and applied while still wet to the wound. It adapts itself perfectly to the wound and acts the same as any other tampon. Experiments on the organs of animals have shown both that the method of sterilization is effective and that very large amounts of the material can be used and perfectly absorbed. A. Goss.

Curtis, A. H.: The Treatment of Hæmorrhage by Injection of Blood. J. Am. M. Ass., 1915, lxiv, 332. By Surg., Gynec. & Obst.

In the treatment of persistent hæmorrhage, Curtis again urges the employment of repeated injections of whole blood. The only apparatus required is an arm constrictor and a 20-ccm. groundglass syringe coated with liquid vaseline. Upon withdrawal from the cubital vein of a healthy donor the blood is immediately injected into the subcutaneous tissues of the patient. Human blood is given preference over serum from lower animals because of certain objections to the latter, notably danger of anaphylaxis, possibility of tetanus, and a tendency to contamination when preserved. Whole blood is found to be fully as efficacious as human serum and can be used without delay and with less danger of infection.

In cases of continued hæmorrhage of moderate severity — for example, hæmorrhage of the newborn — blood injection rivals transfusion in the results achieved and is the method of choice because it requires little technical skill. In infants with severe anæmia, intravenous injection of blood by means of a 100-ccm. lubricated ground-glass syringe is recommended as a worthy substitute for a transfusion operation.

A trial of hæmotherapy in chronic anæmias, wasting diseases, and infections with grave outlook is advocated. The author believes that the stimulating effect of repeated injections of blood offers more hope in this field than does the more difficult procedure of one or even two transfusions of large quantities

of blood.

#### BLOOD AND LYMPH VESSELS

Honigmann, F.: Gunshot Injuries of Blood-Vessels (Über Schussverletzungen der Blutgefasse). Berl. klin. Wchnschr., 1915, lii, 50. By Surg., Gynec. & Obst.

Honigmann reports 9 cases of operation for gunshot injuries of blood-vessels; 8 of them were for aneurism and one was for hæmorrhage from a wound of the lower jaw. In 2 of the cases of aneurism there were diffuse hæmatomata, in 6 there were sacculated aneurisms. In 5 of the cases there were also nerve lesions. Functional disturbances from contracture of the neighboring joints were tolerably constant. Four of the operations were undertaken on account of vital indications: twice operation for gangrene, twice ligation for secondary hæmorrhage. In the other four cases the functional disturbances were regarded as sufficient to indicate extirpation of the aneurism.

Double ligation was performed in preference to suture of the vessels. Theoretically, vessel suture would seem to be the ideal operation, but the old method has been found effective in practice, par-

ticularly under war conditions.

Coenen and Henle have asserted that ligation may safely be undertaken when there is a satisfactory collateral circulation, as indicated by the discharge of arterial blood from the peripheral artery after temporary ligation of the main artery. Von Frisch gives as a positive sign of sufficient collateral circulation a normal color of the skin of the periphery of the limb and the appearance of venous congestion when the circulation in the leading vein is cut off.

The author has found the Coenen-Henle sign reliable. Some authors advise medical treatment unless there are vital indications for operation, but Honigmann thinks operation should be the rule on account of the disturbances in circulation produced by the aneurism and the danger of later growth and rupture.

A. Goss.

Erdman, S.: Wounds of Arteries. N. Y. M. J., 1914, c, 1261. By Surg., Gynec. & Obst.

Two cases of incomplete division of arteries are reported by the author. In each case temporary

hæmostasis was followed by repeated profuse hæmorrhages. The treatment which finally proved successful was the exposure of the artery and its ligation above and below the opening.

J. H. SKILES.

### SURGICAL THERAPEUTICS

Rohdenburg, G. L.: Collodial Silver with Lecithin in the Treatment of Malignant Tumors. J. Med. Research, 1915, xxxi, 331. By Surg., Gynec. & Obst.

Ten cases of absolutely inoperable malignant tumor in man were treated as part of this investigation. All diagnoses were based on microscopic examination of the tumors.

The mixture which the author made use of was prepared as follows: One gram of commercial colloidal silver was rubbed up with three grams of Merck's lecithin, about five drops of water being added to facilitate the process, the ingredients being mixed together until a perfectly smooth, uniformly colored mass, free from grit, was obtained. This was then dissolved in 30 ccm. of a 25 per cent aqueous carbolic acid solution, and the fluid was filtered and sterilized by fractional sterilization. This mixture was given by intramuscular or intravenous injection, the average dose being 7 ccm. repeated every third or fifth day. No toxic phenomena were observed, except a rise of temperature varying from one to three degrees and lasting about

six hours.

In judging the results, the standard of Weil was adopted; namely, actual decrease in the size of the tumor not referable to the ordinary course of the disease. The results were the same as with other methods; that is, the pain was relieved and the patients felt better, both purely psychic changes. There was no question that the clinical appearance of the patients was improved; some even gained in weight, no doubt due to a psychic stimulation of appetite. The ulcerating surfaces of some of the growths cleaned up, probably because of the greater surgical cleanliness afforded patients under constant observation in a hospital. All of these changes were so deceptive that those who had clinical charge of some of the cases were certain that they were benefited. Nevertheless, all the tumors pursued their usual course, grew steadily, as shown by careful measurements, and finally all the patients died, demonstrating thereby the need for extreme caution in reporting the results of therapeutic efforts to affect malignant growths.

GEORGE E. BEILBY.

### ELECTROLOGY

Shearer, J. S.: Measurements with the Coolidge Tube. Am. J. Röntgenol., 1914, ii, 507. By Surg., Gynec. & Obst.

The advent of a tube, in which current and voltage may be independently controlled, marks a new era in the scientific study of X-radiation. Two factors determine the quantity and quality of radiation from a given tube — the voltage and the current. Increase of current at fixed voltage increases the quantity of radiation only; but increase in voltage, without change in current, increases both quantity and penetration. It simplifies the interpretation of result if measurements are made at constant current

and voltage.

Shearer gives seventeen curve charts of various measurements, among which are the following: A seasoned Tungsten target ordinary tube showed in one minute a drop in voltage corresponding to a drop in penetration from about 8 Benoist to a little above 5 Benoist. The same tube, after complete cooling, starting at 3.9 ma. and 60 K.V., showed a drop in three minutes of from nearly 8 Benoist to 5. A Müller water-cooled tube, starting at about 5.2 ma. showed a similar change in three minutes. A corresponding run with a Coolidge tube, starting at about 10 ma. and 70 K.V. (Benoist 9), showed a maximum change of only about 0.3 of a unit Benoist. This shows the certainty of operation for treatment where continuity of quality is of the greatest importance.

The question of the proper design for transformers to be used in radiographic, fluoroscopic, and therapeutic work is of considerable interest. Some information in this connection may be secured by measurement of the actual performance of transformers with a tube as the load. Transformers were tested on a 220-volt line, with heavy, short leads to the transformer. The effect of even slight line resistance is very marked at high current, and would be much greater with a 110-volt supply. The measurement of two transformers at about 40 K.V. showed them nearly identical, but operating at 70 K.V., B will give 5.5 times as much röntgen radiation as will A. Thus, for deep treatment A would be almost useless while B would do fairly

In the test of fluoroscopic screens a considerable difference was shown. Several of the newer screens equal or surpass the "P-B-C." David R. Bowen.

Fraenkel, M.: The Stimulating Effect of X-Rays and Their Therapeutic Use in Chlorosis (Die Reizwirkungen der Röntgenstrahlen und ihre therapeutische Verwendung bei Chlorose). Zentrabl. f. Gynäk., 1914, xxxviii, 932. By Surg., Gynec. & Obst.

Dysmenorrhœic disturbances are frequent accompanying phenomena in young girls suffering from chlorosis. These disturbances which have been treated rather ineffectually with iron preparation, the author states he has influenced rather successfully with X-rays.

He treated a few such cases with hæmoglobin of 48 to 50 per cent, mild Basedow symptoms, such as tachycardia, general unrest, extreme nervousness, and slight enlargement of the thyroid, basing his treatment on the following hypothesis. Bumm's view that the infantile uterus develops only after ovarian function begins leads to the conclusion that in the absence of or in the presence of a hypofunction of the ovary the infantile uterus can persist. A case of K. Elliot proves that by means of ovarian, corpus luteum extract and massage regular menses and later fully developed ovarian follicles can be brought about, so that pregnancy occurred one-half year later in his particular case. The uterus in this case had developed to normal size.

Furthermore the experiments of Steinbach in feminizing males and masculinizing females likewise proved similar relationships. By implantation of ovaries into males, he succeeded in developing their mammæ so as to produce normal milk in fairly good quantity. He attributes this development of the mammæ to the inner secretion of the

implanted ovary.

In discussing Basedow's disease he considers the gradual disappearance of menstruation as an index of the severity of the case, so that a hypofunction of the ovary may be considered as a predisposing factor for the onset of Basedow's disease. Analogous to this is the fact that the climacterium is a predisposing factor for the onset of Basedow's disease, likewise the total extirpation of all ovarian tissue at operation. This is another reason why excessive doses of X-ray should not be administered without just cause. The conclusion must be drawn that in Basedow's disease the ovarian function should be stimulated with stimulating X-ray dosage, especially in the form of fractional doses. This is especially to be desired in those cases of myoma complicated with exophthalmic goiter. It is most desirable to begin with raving of the thyroid gland, as the ovaries receive stimulating effect from this source. He mentions an interesting case of exophthalmic goiter in which the patient developed all the typical symptoms including loss of weight to 70 pounds, and the menses gradually disappeared and remained absent for eight months. A partial thyroidectomy was performed and the patient gradually improved, menses returned and remained normal for four consecutive months. Six months later further symptoms set in, amenorrhœa again occurring. X-ray treatment of the goiter, plus stimulating raying of the ovaries, again caused an improvement with the return of the menses. There is no doubt in this case that the action of the X-rays was twofold; first reducing the goiter (measurement for 43 to 39 cm.) with associated symptoms and, secondly, producing normal menstrual periods.

This observation on the one hand, viz., the fact that symptoms of Basedow's disease often make their appearance in chlorotic girls; on the other hand, that so many young girls suffer from chlorosis (which improves almost immediately after marriage) uninfluenced by iron therapy, points to a hypofunction of the ovary as a cause of chlorosis. He has employed the treatment of stimulating raying to the ovaries in five cases, and was able by

this alone to raise the hæmoglobin of these patients from 48 per cent to 78 or 80 per cent and in two cases even to 85 per cent. This offers a new field for X-ray therapeutics which the author believes will be of considerable value.

L. A. JUHNKE.

#### MILITARY SURGERY

Schloessmann: Secondary Hæmorrhage After Gunshot Injuries (Über Spatblutungen nach Schussverletzungen). Beitr. z. klin. Chir., 1915, xcvi, 129. By Surg., Gynec. & Obst.

One of the most unpleasant complications in military surgery is secondary hæmorrhage after gunshot wounds. These secondary hæmorrhages are due either to secondary erosion of the bloodvessel or primary injury of the vessel by the bullet on the field.

Hæmorrhage from erosion is not unknown in civil surgery. In comminuted fracture one of the fragments may not be properly replaced. It exerts a continuous pressure on the vessel wall, finally leading to pressure necrosis and rupture. There is much more opportunity for such erosions in war, as comminuted fractures are more numerous and severe; fixation is defective; long transportation is necessary, causing a continuous jarring of the patient. However, this is only a secondary factor in the causation of secondary hæmorrhage. Erosion is more frequently caused by extension of the suppurative processes, so that it involves the vessel wall, leading to necrosis and rupture.

Most hæmorrhages from erosion are in the veins. Thin-walled veins naturally give way more quickly than the more resistant arteries. These venous hæmorrhages may stop spontaneously; often when the physician arrives there is little or no bleeding and he is tempted to be satisfied with tamponing. The hæmorrhage is apt to begin again just as spontaneously and lead finally to death or very

severe anæmia.

However, the great majority of secondary hæmorrhages are due to primary injury of the vessel by the projectile. Modern bullets move so much more rapidly and have so much greater penetrating power that injuries of vessels and nerves are more frequent than formerly. A bullet may penetrate the blood-vessel completely but the surrounding tissues may fill up the wound so that there is only effusion of blood into the surrounding tissues, and hæmatoma or traumatic aneurism is formed, or there may even be no hæmatoma. The bloodvessel may contract so as to completely shut up the The intima rolls inward and the surrounding tissues plug up the wound and a thrombus is formed. In all such cases there is danger of secondary hæmorrhage. Of course, it is greater if there is suppuration in the wound.

The danger of such secondary hæmorrhage lasts until the fourth or fifth week. Hæmorrhages may take place even in aseptic wounds after the healing

of the entrance and exit wounds.

The clinical picture in these cases is that of increasing pain and tension in the limb with nervepain and peripheral paræsthesia, and finally considerable ædema; i.e., symptoms of pressure of an intramuscular hæmatoma on the nerves and veins. If the possibility of aseptic secondary hæmorrhage is borne in mind and the course of the shot crosses the path of a vessel, diagnosis is not difficult. Secondary hæmorrhage from a false aneurism that has not been observed or correctly diagnosed may give symptoms very like those of a large abscess. Several cases have been described in which such aneurisms were opened under the mistaken diagnosis of abscess. Schloessmann gives a history of a case of his own.

An important point in the treatment of secondary hæmorrhage is to bear in mind the possibility of its occurring. The only certain and effective treatment is ligation of the blood-vessel at the place of injury. Tamponing, pressure, and ligation at any other point are only makeshifts. A. Goss.

## Frank, J.: Penetrating Gunshot Wounds of the Abdomen. Chicago M. Recorder, 1914, xxxvi, 641. By Surg., Gynec. & Obst.

It is generally recognized by the civil surgeon that immediate operative interference gives the best results in cases of penetrating gunshot wounds of the abdomen. However, the line usually followed by military surgeons is conservative, and operation is undertaken only for late complications or for signs of marked hæmorrhage.

The arguments of the military surgeon are that (1) operative treatment in war time has proved disastrous, as statistics show that all cases operated on were fatal; (2) asepsis cannot be carried out in the field; (3) the wounded cannot be cared for during the battle; and (4) there is great danger of tetanus.

As to the first argument, many of the deaths are in all probability due to factors other than the operation. The wounded are transported over rough roads and in many cases a day or two may elapse before treatment can be administered. During this time peritonitis has been developing and the operation is performed too late. As to the other arguments, it seems to the author that with proper preparations these objections can be removed. In closing he makes a strong appeal for the same treatment of military wounds as that accorded wounds in civil life.

J. H. Skiles.

# Hackenbruch: Treatment of Gunshot Fractures with Extension Braces (Erfahrungen über die Behandlung von Schussknochenbrüchen mit Distractionsverbanden). Med. Klin., Berl., 1915, xi, 61. By Surg., Gynec. & Obst.

Hackenbruch describes the treatment of fractures with extension braces. He has treated 21 cases, 16 of which were compound gunshot fractures, the others simple fractures of the extremities. He has found from experience that these extension braces can be used successfully even in cases of

extreme comminution of the bones and extensive injuries of the soft parts. He has used them successfully in some apparently hopeless cases of severe injuries with grenades where it seemed at first that the limb would have to be amputated, but he succeeded in getting the bones into good position and avoided amputation.

The standard for each end of the long brace is fastened solidly in the plaster cast, then by turning a nut in the center of the brace the ends are pushed apart as far as desired. The extension can thus be regulated at any moment and the brace and cast are made light enough so that the patient can walk around while the fractured bone is knitting together, the ends being held in proper position by the stretching of the segment of the limb.

The article has 18 illustrations showing the application of the brace to the arm, ankle, thigh, and leg, and the correction of a displacement of the long bones realized with it. The joints above and below are left exposed to permit the normal use of the limb. From almost the first the limb can be moved actively without pain, so that men with badly shattered long bones are able to be up and about.

A. Goss.

# Noehte: Operative Treatment of Injuries of the Spinal Cord in the Field Hospital (Über operative Behandlung der Rückenmarksverletzungen im Feldlazarett). Deutsche med. Wchnschr., 1915 xli, 14. By Surg., Gynec. & Obst.

Noehte describes briefly 20 cases of spinal cord injury; 2 improved without operation; 9 died of different complications without operation. Nine were operated on, of which 2 improved to such an extent that there is reason to believe that they will be able to walk; 1 improved after an abscess was opened; 1 improved but the paralysis was little changed; 3 were unchanged; 1 died of meningitis; 1 died of respiratory paralysis; this was an injury of the lower cervical cord with ascending softening.

From his results Noehte agrees with Guleke that early operation in spinal cord injuries is justifiable. He does not perform laminectomy until the third day, for there is a chance that during the first two days improvement will take place without operation; it is dangerous to wait longer on account of the probability of bladder infection.

A. Goss.

### Lewandowsky, M.: War Injuries of the Nervous System (Die Kriegsverletzungen des Nervensystems). Berl. klin. Wchnschr., 1914, li, 1929. By Surg., Gynec. & Obst.

Lewandowsky takes up chiefly the question of indications for operation. In injuries of the brain the results are much better with operation than without. Holbeck's statistics give a mortality of 14 per cent after operation as compared with 50 per cent in non-operated cases. Operation is especially indicated in tangential shots, for bone splinters are especially apt to be forced into the brain. Shots that enter the skull diametrically

frequently pass through the brain entirely without doing much damage. The chief indications in such cases is thorough cleansing to avoid infection and

careful watching for later developments.

All cases of brain injury should be kept under observation for five to six weeks on account of the danger of meningitis or brain abscess. One can scarcely fail to notice the signs of meningitis, but in brain abscess there is often no rise of temperature; the general conditior, dullness, and headache must be relied upon for the diagnosis. Fissures caused by shots may extend to the base of the brain and involve the nerves of the base, especially the cochlear and vestibular, with deafness and incoördination. The prognosis is relatively good, as the soldiers are mostly young and strong, but brain injuries may be followed by disturbances in speech, paralysis, and even traumatic epilepsy. Operation as a rule is not effective in these conditions, even in epilepsy.

Though operation is indicated in the majority of cases of brain injury, it is distinctly contra-indicated in spinal injuries. If the spinal cord is completely severed, operation does no good; if it is only partially separated, the chances for recovery are as good without operation as with it. The most important thing in the management of injuries of the spinal cord is to avoid infection of the bladder and bed-sores. Injuries of the cauda equina may be treated more

like those of peripheral nerves.

Injuries to the peripheral nerves are extremely frequent in war, and the indications for operation are difficult to decide upon. The neurologist frequently cannot tell whether the nerve is completely severed or not; but in general, if the paralysis remains stationary or grows worse for four to eight weeks, operation should be performed. Operation consists in freeing the nerve from scar tissue, then nerve-suture or neurolysis. In general, operation is not indicated simply for pain in the nerve. It is difficult to discuss the results of operations on nerves, for the time has not been long enough. The beneficial effects of nerve-suture often are not manifest for as long as eight months. The results of neurolysis become evident sooner, function often being restored after two months. A. Goss.

### Tubby, A. H.: Nerve Concussion Due to Bullet and Shell Wounds. Brit. M. J., 1915, i, 57. By Surg., Gynec. & Obst.

In reporting cases of nerve injury under his care at the Fourth London General Hospital, Tubby states that it is a little difficult to gather what is the general acceptation of the vague term "concussion of nerve." He thinks the following definition may prove acceptable: "It is damage done to a nerve-trunk without actual destruction of the axis cylinders; and the damage may consist of an effusion of blood between the fibers, following compression of the nerve against a bone by the rapid passage of a foreign body in the immediate neighborhood of the nerve. In other cases the actual lesion may not amount to hæmorrhage, but to a temporary

anæmia, or its opposite, hyperæmia of the nerve, and specimens are required for microscopical examination before a precise diagnosis can be made. It is also possible to conceive that in certain large nervetrunks, such, for instance, as either of the popliteal nerves, where the motor fibers can be split up for a very long distance from the sensory, either a motor or a sensory bundle may be injured, so that in one case motor paralysis alone may exist and in another sensory symptoms be present."

In all cases stereoscopic skiagrams were taken. Where possible or practicable the shell fragment or bullet was removed, especially if it was near some large nerve-trunk. Tubby says these physiological paralyses will clear up. A partial or irregular paralysis of muscles supplied by one nerve-trunk is indicative of a physiological blocking such as arises from a small hæmorrhage in or around a nervetrunk or a bruising. A persistence of the reaction of degeneration is an indication for exploration of the nerve. While waiting for the power to return he emphasizes the necessity of relaxing paralyzed muscles; e.g., wrist-drop to hyperextend on a splint, foot-drop to dorsi flex the foot beyond a right angle. Massage and electricity should be given in these same positions. M. S. HENDERSON.

### Bland-Sutton, J.: The Value of Radiography in the Diagnosis of Bullet Wounds. Brit. M. J., 1914, ii, 953. By Surg., Gynec. & Obst.

Bland-Sutton describes the Spitgeschoss bullet used by the Germans. It is sharp-pointed and has a higher initial velocity than bullets of an older pattern. It has a solid core of lead enclosed in a nickel case deficient at the base. He emphasizes how necessary the use of the X-ray is in locating bullets which have by some freak located themselves at some unthought-of spot a considerable distance from the point of entrance. Troublesome wounds are often caused by these Spitzgeschoss bullets striking a hard object first, such as a stone, before entering its victim. The nickel covering strips and is distorted into fantastic shapes causing extensive wounds erroneously attributed to expanding bul-The author thinks that a bullet is better removed than left in, but no hard and fast rule can be adhered to. The size of the skin wound is no indication of the damage sustained within. attempt to ascertain the amount of damage done should be made by manipulation, by insertion of a finger into the wound, or by a probe. X-ray examination saves infection, pain, and much misery.

M. S. HENDERSON.

Rusca, F.: Experimental Study of the Traumatic Pressure Effect of Explosions (Experimentelle Untersuchungen über die traumatische Druckwirkung der Explosionen). Deutsche Ztschr. f. Chir., 1914, cxxxii, 315. By Surg., Gynec. & Obst.

Rusca discusses cases of injuries in war from explosions where there were no external injuries. Such injuries are evidently caused by an extreme

degree of compression of the surrounding medium, air or water, which then injures the body by pressure or concussion against it. In order to determine the nature and extent of such pressure injuries he performed a series of experiments on rabbits, rats, and fishes. The animals were placed in a half enclosed space and explosions produced by means of various explosives, care being taken that the animals should not be directly wounded. The internal organs were then examined microscopically. These cases were characterized by the fact that there were numerous internal lesions without any visible external wounds. There was practically no difference between the effect of air and water; both acted essentially like trauma from a blunt instrument.

Lesions of the central nervous system are often observed, but generally they are not fatal. There may be brain lesions without any injury of the skull, but a previous trephine increases the susceptibility of the brain to injury very greatly. Direct lesions as well as contusions from contrecoup were observed. Perforations of the tympanum and intra- and extra-ocular hæmorrhages were frequent. Hæmorrhages in the thymus, heart, and spleen were also often observed. In the liver, kidney, stomach, intestine, and diaphragm, in addition to hæmorrhage there were sometimes severe lacerations of the tissues. The lung being the most sensitive organ, in all cases there were hæmorrhages of the lungs on both sides and sometimes severe laceration of the lungs. The greater vulnerability of the lungs is due to the fact that they consist of elements that vary greatly in compressibility and thickness. This also explains the pronounced periarterial and peribronchial localization of the lung hæmorrhages.

The fact that the hæmorrhages, which are moderate in degree, are almost exclusively around the large, deep-lying arteries explains the fact that in human beings after compression of the thorax there are often no lung symptoms at first, while later posttraumatic lung diseases develop. The cases of scalping in accidental explosions show that scalping can be produced by the current of air alone. In many cases the multiple internal injuries are sufficient to cause death, while in others they were not great enough to produce sudden death. In these cases there must have been shock, probably affecting the important centers of the medulla oblongata.

Hoguet, J. P.: Observations on Military Surgery in the Early Weeks of the War. J. Am. M. Ass., By Surg., Gynec. & Obst. 1914, lxiii, 2194.

During the very early weeks of the war many rifle wounds were clean. This condition, however, has become less frequent as the personal cleanliness of the soldiers on the march has become less. Shrapnel wounds are of course attended by a greater amount of infection, because of the greater destruction and bruising of tissues. Saber and bayonet wounds are comparatively rare.

In rifle wounds involving bone, two possibilities are present: either the bullet makes a clean perforation of the bone or the bone is completely shattered. Shrapnel wounds are in general more severe than rifle wounds. These wounds are caused either by the shrapnel ball or by part of the casing of the shell. Wounds of the upper part of the body predominate over those of the lower.

J. H. SKILES.

### **GYNECOLOGY**

#### UTERUS

Essington, U. K.: Cancer of the Uterus; Surgical Treatment. Ohio St. M. J., 1915, xi, 19.

By Surg., Gynec. & Obst.

The palliative treatment of uterine cancer should be more thoroughly understood, for a large proportion of these cases do not apply to the surgeon for relief until they are inoperable. Too little has been attempted for the relief of these patients; quite often all that is recommended is morphine for the pain and douches for the stench. Much can be done to prolong the life and mitigate the sufferings of these unfortunates by comparatively simple measures.

Palliative surgical measures consist mainly in the destruction of the carcinomatous mass with the actual cautery and in the employment of zinc chloride tamponage following the use of the curette.

The curative operation should be the most extensive and most radical possible without too great risk to the patient's life. The uterus may be removed either by the vaginal or abdominal route. The vaginal route is easier in fleshy patients, and in patients poorly able to stand shock it offers a lower mortality. The author employs the combined vaginal and abdominal method. The actual cautery is used extensively in the vaginal portion of the operation.

The after-treatment is of great importance. deep vaginal tampons are not removed until from the fifth to the eighth day, at which time they become loosened and there is then no danger of severe hæmorrhage. Usually at the end of ten or eleven days the sloughs can be removed with the dressing forceps. After the gauze is removed the patient should have a mild permanganate douche, care being taken that very little force is employed.

Cancer is greatly on the increase, and the laity should be taught something of its real nature and how it may, to some extent, be prevented.

It may be infectious, and every endeavor should be used to protect physicians and patients from becoming inoculated. Much can be done to relieve some of the suffering of the incurable cases of cancer of the uterus. Curative treatment must be surgical and it must be most radical.

EDWARD L. CORNELL.

Duffy, R.: Uterine Hæmorrhage at Puberty. N. Orl. M. & S. J., 1915, lxvii, 628. By Surg., Gynec., & Obst.

Uterine hæmorrhage, either menorrhagia or metorrhagia, or both, is not an uncommon phenomenon of the first years of menstrual history. It is

possible for such a hæmorrhage to have its origin and explanation in some gross pathological change, as abortion, infection, or polyp. Bleeding at this age, however, in the vast majority of cases, furnishes us with no evidence of any especial uterine disease. Hæmorrhage of this class — the so-called essential or functional hæmorrhage — is discussed at some length. Congestion of the pelvic viscera from constipation or valvular heart disease and flaccidity of the uterine muscle are mentioned as probable causes of this condition in certain cases. Duffy is of the opinion that the thyroid gland bears an important relation in the production of these functional hæmorrhages and quotes Hertogue of Antwerp as follows: "When the thyroid is normally active, the menses are normal; when weak, menorrhagia sets in. The weaker the thyroid the greater the loss of blood." Some other causes mentioned are hæmophilia, leukæmia, chlorosis, and essential anæmia. In 55 cases of uterine hæmorrhage in which the local cause was not determined, Duffy states that Sehrt found that 38 cases presented signs of marked hypofunction of the thyroid.

The treatment suggested is divided into (1) local

and (2) general.

I. In local treatment the curette should not be resorted to unless all medical treatment fails or unless, because of very profuse hæmorrhage, it

becomes necessary to pack the uterus.

2. The author is of the opinion that the treatment of this condition is primarily medical and advises the following plan of treatment: calcium chloride in large doses — 80 grains a day; blood serum (either horse or human) 15 ccm. to 30 ccm. every other day hypodermatically; or the use of thyroid or pituitary extract.

WILLIAM D. PHILLIPS.

Reynolds, E.: The Principles Underlying the Successful Treatment of Sterility in Women. Med.-Surg. J. Tropics, 1914, xiii, 249.

By Surg., Gynec. & Obst.

The author finds that most sterilities are produced by minor variations from the normal which are not recognized as such. Sterility may be due to the following causes:

I. To the persistence of underdeveloped or

infantile organs.

2. To altered conditions in the secretions of the genital tract.

3. To failures of ovulation.

Grave failures of the first class are practically hopeless. Sterility due to altered secretions represents the unfavorable influence on the spermatozoa by secretions coming from the mucous membranes of the genital tract. These changes may be so slight as to attract no attention. It must be remembered that the spermatozoa head away from an acid and toward an alkaline medium. Constrictions of the genital canal may lead to a retention of the secretions with consequent inspissation to a degree which prevents the spermatozoa from making effective progress, or the outward flow of the secretions may be so rapid as to prevent the passage of the spermatozoa past the constricted point. Stasis and infection may alter the secretions after they have been poured out. These various changes produce sterility without ill health.

Failures of ovulation are represented either by persistent corpus luteum or by distention of the ovary by retention cysts with thickening of the capsule. The presence of a persistent corpus luteum in the ovary inhibits pregnancy; hence removal of this body is generally followed by the

prompt appearance of pregnancy.

Distention of the ovary by retention cysts means that their ova have not been expelled. This, with a thickened capsule, prevents the expulsion of other ova. Removal of the retention cysts is rarely followed by a recurrence of the same cystic condition.

Among the causes of hostile secretions are hyperacidity produced by the use of too much table salt with the food or by other forms of general acidosis. Such a state demands general medical treatment. The presence of bacteria in the vaginal secretions may produce purulence and hyperacidity. This condition is cured by most thorough disinfection.

While many of the minor cervical alterations can be corrected by minor treatment, in many of them larger measures are needed to secure perfect drainage from the uterus and consequently from the tubes.

Curettage and disinfection of the cervix must be so thorough as to produce absolutely normal cervical secretions. If the change in the secretions has extended above the cervix, the uterine cavity must also be curetted.

The author notes that the uterine orifice of the tube has such a small lumen that very slight changes in this region may be responsible for sterility. He notes that congestion of the tube without apparent inflammation is extremely common. In fact, persistent copora lutea are in the majority of sterile cases associated with imperfect drainage from the uterus, probably as a result of consequent congestion. In many cases he advises obtaining proper uterine drainage by a suitable discission of the posterior lip and division of the anterior attachments of the cervix.

In conclusion, he states that great care is necessary to decide whether to advise the minor plastic operation only and to hold the conservative work on the ovary or tubes and ovaries in reserve for possible future use, or to advise complete repair at one sitting.

S. W. BANDLER.

### ADNEXAL AND PERIUTERINE CONDITIONS

Herrmann, E.: An Active Substance in the Ovaries and Placenta (Über eine wirksame Substanz im Eierstocke und in der Placenta). Monatschr. f. Geburtsh. u. Gynäk., 1915, xli, 1.

By Surg., Gynec. & Obst.

Herrmann reviews the work of other authors in preparing extracts from the ovaries and placenta, and describes in detail his method of obtaining in pure form from these organs an active principle that is a chemical entity. He separated the corpus luteum from the other constituents of the ovary, so that it is purely a corpus luteum substance. The substances from the corpus luteum and the placenta are identical, but a placenta contains a greater amount of it than a corpus luteum. It is a yellow oil that may be solidified by cold, but otherwise remains a thick fluid. It turns brown in the air from oxidation; it is a cholesterin derivative soluble in alcohol, ether, acetone, and benzol, but not soluble in water.

The animal experiments in which he tested the action of the substance are described. In the course of preparing the substance, before it was obtained in a pure form, it had various injurious effects on the animals, but after it was obtained in a pure form it had no bad effect whatever. It had a very powerful effect in stimulating the growth and development of the sexual organs. Young animals 8 weeks old after five days' injections showed the sexual development of animals 25 to 30 weeks old the injections were continued, changes similar to those of early pregnancy took place. The mammary glands of both male and female animals were powerfully developed. The substance also contributes to the development of secondary sexual characteristics. Its action proves that the development of the mammary gland is dependent on the secretion of the corpus luteum and placenta.

Macroscopic changes in genital organs after injections are shown by colored plates; the microscopic changes are also shown by figures. A bibliography of 60 titles completes the article. A. Goss.

Sanes, K. I.: Torsion of Ovarian Cysts; Report of Cases. Am. J. Obst., N. Y., 1915, lxxi, 76.
By Surg., Gynec. & Obst.

The author states that in 51 operations for ovarian cysts he had 9 cases of torsion, or 17 per cent. He quotes the statistics of Schauta, who found torsion of an ovarian cyst in 23 per cent, and Hoffman in 9 per cent; Pfannenstiel, while reporting an average of 20 per cent, called attention to the wide variation of statistics from the 47 per cent in Küstner's clinic to 5 per cent in Martin's, and explained this variation by the different degree of readiness with which patients apply for operative relief from uncomplicated ovarian cysts. Of 31 cases in which the number of births were specified, 17 were multiparæ, 8 nulliparæ, and 6 primiparæ. The most common age was between 20 and 40; the youngest

found in the literature was 2 years old and the oldest 67. Torsion was found to occur more frequently on the right side, the proportion being 3 to 2.

The operative prognosis is generally good. There were no deaths in the author's series, and of the four deaths he found reported in the literature one was due to acute nephritis, one to yellow atrophy, one to perforation of the sigmoid caught in the twist, and one to sepsis.

C. H. DAVIS.

Falco, A.: Solid Teratoma of the Ovary (Sul teratoma solido dell' ovaio). Ann. di ostet. e ginec., 1914, XXXVI, 397.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The operation is described in a case of teratoma of the left ovary in a 16-year-old girl. Four months later a second laparotomy was done for the recurrence of the tumor and implantation in the parietal peritoneum, followed by death. At autopsy there

was a careful examination of the organs.

After a review of previous literature the author concludes that solid teratomata of the ovaries are to be regarded clinically as malignant tumors, even if the histological findings do not so show it. Diagnosis is almost always impossible, as there are no characteristic symptoms. Treatment is operative removal. No cases of spontaneous recovery are known. Both the solid and cystic types probably originate from displacement and further development of the blastomeres of a twin embryo.

KLEIN.

Storer, M.: Ovarian Transplantation; Report of a Case of Implantation into the Uterus with Resulting Pregnancy. Boston M. & S. J., 1915, clxxii, 41. By Surg., Gynec. & Obst.

The author reports a case in which he transplanted a portion of ovary into the uterus by bisecting a tubal stump; the portion of ovary with some of its original blood supply retained was then placed in the cut in the uterine wall and lightly anchored in place with fine catgut in such a way that most of its cortex projected into the uterine cavity. The uterine wall was then brought together over it with deep and superficial layers of catgut. This was followed by pregnancy sixteen months afterward. Everything progressed as in a normal pregnancy for about three and one-half months, when the patient passed some blood, a mass of detritus, and the uterus began to decrease in size. In view of the symptoms and conditions present, he states that it is fair to infer that this was an abortion of an early pregnancy, retained for some time after the death of the fœtus.

Storer carefully reviews the opinions and results of various investigators along this line and states that although the majority of them differ as to the final benefit to the patient, he believes there is one indication for ovarian transplantation which seems justifiable, that is when the operation is done with the hope of pregnancy ensuing.

WILLIAM D. PHILLIPS

Tschernischoff, A.: Transplantation of Ovaries, Especially in Mammals; a Study of the Question of Transplantation Immunity (Die Eierstocksüberpflanzung, speziell bei Säugetieren; ein Beitrag zur Frage der Transplantationsimmunität). Beitr. z. path. Anat. u. z. allg. Path., 1914, lix, 162. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In order to positively determine the question of the significance of the ovary, we must first settle that of internal secretion. So far it has been determined experimentally that the most important internal secretory component is the interstitial gland. The corpus luteum is of importance only in menstruation and pregnancy. This fact is of vital importance in deciding therapeutic measures for so-called symptoms of the menopause, for which a threefold treatment may be used: viz., (1) prophylactic maintenance of function and autoplastic implantation of normal ovarian substance in the body of the patient operated upon; (2) administration of ovarian preparations; and (3) homoplastic transplantation of ovaries. In the last-named method the ovary is removed either totally or partially; that is, leaving a pedicle, and is transplanted to another place in the same or another individual.

The author distinguishes four kinds of ovarian transplantation: (1) autoplastic, (2) homoplastic, (3) heteroplastic, and (4) transplantation to males.

He gives a detailed description of the technique and finds that in autoplastic transplantation of the ovary in sexually mature rabbits the transplanted ovaries take in their new location and fulfill their varied functions for a long time. Homoplastic transplantation was performed on twelve rabbits and showed that the transplanted ovary may take and function for awhile but for a much shorter time than in autoplastic transplantation. Preceding treatment of the animal to which the ovary was transplanted, with tissue of the same or a different species had an injurious effect on the organ when transplanted. Preceding treatment of the animal from which the ovary was taken produced an effect midway between simple transplantation and that in which the other animal was previously treated. In all three kinds of homoplastic operation there was a complete regeneration of a greater or lesser part of the interstitial cells.

With reference to heteroplastic transplantation, the author finds, from the work of other authors, that the ovaries do not become an organic part of the body of the new host but are completely absorbed. The ovaries transplanted to males may take and perform their function for four or five months, when they undergo complete absorption.

A peculiar group in the ovarian plastic operations is the implantation of very young ovaries into young animals that have previously been castrated

(Steinach).

Since animal experiments have shown that the interstitial cells have not only a protective but also a morphogenetic influence on the body, and

that this part of the ovary is preserved the longest in transplantation, especially in auto- and homoplastic transplantation, the author comes to the conclusion that in selected cases ovarian transplantion in women is justified.

TORGGLER.

Wätjen, J.: The Histology of Purulent Salpingitis and Its Relation to Etiology (Über die Histologie der eitrigen Salpingitis und ihre Beziehung zur Frage der Ätiologie). Beitr. z. path. Anat. u. z. allg. Path., 1914, lix, 418.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

After considerable work on this subject in conjunction with Schlimpert, the author decides, with some limitations, that there is a characteristic histology for the different forms of purulent salpingitis, depending on their etiology. Unlike other authors, especially Amersbach, Wätjen observed, after dilatation of the cervix with laminaria tents, severe degrees of inflammation with pronounced lymphangitis and phlegmonoùs inflammation of the wall of the tube. One characteristic indication of inflammation caused by laminaria is hæmor-

rhage.

Tuberculous diseases of the tube can generally be recognized by their typical tissue changes; only in very recent cases are they apt to be confused with other acute forms of salpingitis. Plasma-cells appear in the tissue of the tube in tuberculous dis-Wätjen found an acute endosalpingitis following acute appendicitis and an old endosalpingitis which was very probably due to a preceding severe appendicitis. The peculiar condition of the lymphocytes and plasma-cells distinguishes acute gonorrheal tubal catarrhs, so that if a gonorrheal infection is probable from the clinical signs the diagnosis can be made from the histological picture, even without demonstrating gonococci. however, streptococci may produce similar changes in subacute and in chronic cases, Wätjen points out here, as in his earlier studies on ovarian abscesses, the importance of the difference in the composition of the pus and gives an accurate clinical study of the individual case. He thinks that the points indicated by Schridde for the diagnosis of gonorrhœa are too limited; he also disagrees with Miller's opinion that when all other signs of differential diagnosis for gonorrhœa are lacking diagnosis can be made from the composition of the gonorrheal pus. WEISHAUPT.

Chavannaz and Loubat: Subperitoneal Hæmatocele in the Broad Ligament (Hématocèle souspéritonéale developpée dans l'epaisseur du ligament large). Bull. Soc. d'obst. et de gynéc., Par., 1914, iii, 428.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The patient, a 24-year-old woman, missed her December period. Since the second of December she had had a discharge of blood and had pain in the right lower part of the abdomen, but after the eighth of January the hæmorrhages almost en-

tirely disappeared, but the pain persisted. When admitted to the hospital, on February 17th, her temperature was 37.70°, pulse 100, skin pale. To the side of and behind the large uterus a fluctuating tumor could be felt. On November 18th there was a severe attack of pain and a decided increase in the size of the tumor, which could be felt almost up to the umbilicus. The pulse was rapid and there was increasing anæmia. On the next day laparotomy was performed. In the right ligament, just above the right ovary, a hæmatoma was found as large as a child's head. The tube, which was considerably thickened, was enclosed in the hæmatoma; it was opened and drained. The patient had icterus after the operation. The temperature was subfebrile. In the ovary there was a large corpus luteum. In the tube no chorioplacental elements were found, not even microscopically.

The pathogenesis of the case is not clear. There is no reason for assuming the origin of the hæmatoma from rupture of veins in the broad ligament. Ovarian hæmorrhages are always intraperitoneal. The pathogenesis suggests somewhat a hæmatosalpinx or a hæmorrhagic salpingitis. A tubular pregnancy seems more probable.

Benthin.

Crosthwait, W. L.: Varicocele of the Broad Ligament. Texas M. News, 1915, xxiv, 296.

By Surg., Gynec. & Obst.

The following is a fairly illustrative case: A woman, 30 years of age, complained of constant backache, dull burning pain in both iliac regions, worse in the left, aggravated when on her feet and often extending upward toward the kidneys. She was very nervous and irritable, and was troubled with constipation. On examination the uterus was found to be prolapsed and retroverted. The cervix was elongated and had a stenosed os, the left ovary was prolapsed and enlarged, and a slight mass was present in the broad ligament.

At operation the left ovary was resected and the uterus brought up and suspended by use of the round ligaments. Recovery was uneventful.

A mass of varicosed veins the size of a small pecan was observed in the fold of the broad ligament on the left side, also a smaller mass on the right. The advisability of removing them was discussed; but as the condition was thought to be due to obstruction of the pampiniform plexus, owing to the malposition of the uterus, it was reasoned that the condition would disappear or correct itself when the uterus was replaced and maintained so.

The patient did not improve and within the next few months was as bad if not worse than ever. In fact a year later she was a chronic invalid.

Two years later at operation the uterus was found in the same position as at the previous operation and the round ligaments had degenerated into mere cords. The greatly dilated plexus of veins in the left broad ligament was removed entire and the larger ones ligated and resected in the right side. The uterus was suspended by anterior plication of

the broad ligaments, the round ligament also being utilized by plication and anchored in the midline of the fundus anteriorly.

The patient has been entirely well since the operation. On examination two years later the uterus was found to be in a normal position.

EDWARD L. CORNELL.

#### EXTERNAL GENITALIA

Fabricius, J.: Primary Carcinoma of Bartholin's Gland (Über ein primäres Carcinom der Bartholinischen Drüse). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 69.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The patient was a 45-year-old woman with carcinoma of Bartholin's gland on the left side. Radical operation with removal of the adjacent segment of the rectum was followed by recovery with rectal fistula. Later, operation was performed for the fistula, then one on the inguinal glands, then one for recurrent tumor in the vaginal scar, and still later another one on the inguinal glands. Finally there were metastases in the bone and the patient died five years after the first operation.

Grieve, J. M.: Leucorrhœa, with Special Reference to Treatment by Vaccines and Ionization. South African M. Rec., 1914, xii, 415. By Surg., Gynec. & Obst.

The author goes into a very general consideration of leucorrhœa. He finds the condition frequently associated with febrile attacks, with rheumatoid arthritis and pyorrhœa alveolaris. He refers to cases associated with erosions, mucopurulent discharge, nabothian follicles, large flabby uterus, abnormally broad ligaments. He mentions cases in which the uterus was fixed and the fallopian tubes enlarged and tender, or affected in the form of an acute or chronic abscess occasionally "leaking into the uterus."

Grieve advises three forms of treatment:

I. Curettage, followed by repeated irrigations

on the principle of draining an abscess.

2. Vaccination which as a rule produces a reaction and often improves the condition, but is not in itself, in the vast majority of instances, sufficient to effect a cure. He places his greatest reliance on the method known as ionization.

3. In ionization various solutions, preferably a zinc solution, are introduced into the vagina, kept there by a mechanical appliance, and used as a fluid electrode. The author states that he has no doubt that the fluid enters the tubes in very many cases. current which he uses is of a strength of 50 milliamperes for 15 to 30 minutes. He also uses zinc and copper intra-uterine electrodes. With this method of ionization vaccines are administered at the same time. He finds that after a few treatments cultures from the uterus are sterile, and that the vaccines no longer produce reactions.

The author mentions the various forms of bacteria which he finds in leucorrhœa and believes that the symptoms of anæmia and toxæmia will disappear under the method of treatment which he advocates. S. W. BANDLER.

Pozzi, S.: Mobilization of the Rectum in Perineorrhaphy for Complete Rupture of the Perineum (De la mobilisation du rectum dans la perineorraphie pour rupture complète du périnée). Rev. de gynéc., Par., 1914, xxii, 369.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Pozzi thinks that the suture of the anterior wall of the rectum is unnecessary in his method, which he describes as follows:

A transverse incision of the rectovaginal wall is made. Immediately above the border of the vagina a small cuff is formed in front of the newly-formed anus; two lateral perpendicular incisions complete the H-shaped incision. The levator is laid bare, as well as the rest of the sphincter ani. The anterior wall of the rectum is mobilized until its lower edge can easily be brought to the point where the new anus is to be formed. Buried sutures unite the levator, the deep sutures at first being left untied; solitary suture is used for the rest of the sphincter; the divided surfaces of the paravaginal tissue and the vagina are sutured. Radial suture is used for the anterior part of the anus and button suture for the newly-formed perineum. If there is severe cicatricial contraction of the lower part of the rectum, a posterior rectotomy must always be performed. After the operation a tube is introduced into the intestine and a strip of gauze into the vagina which is fastened over the new perineum through the deep sutures, which have finally been tied over gauze pads. A permanent catheter is introduced. The bowels are kept locked for four days. A strict diet is enforced for eight days before and eight days after the operation. The fourth day after the operation a bowel movement is produced; on the sixth day the deep sutures are removed and on the twelfth the superficial sutures.

The author claims priority in this method, the essential point in which is the extensive mobilization of the rectum. Frankenstein.

### MISCELLANEOUS

Gibbons, R. A.: Some Common Errors in Diagnosis and Treatment in Gynecology. Med. Press & Circ., 1915, xcix, 56.

By Surg., Gynec. & Obst.

In a concise and clear manner the author discusses the most common mistakes usually made in gynecological work. He is of the opinion that pregnancy and extra-uterine pregnancy are frequently confused with other conditions. He reports several cases illustrating the fact that the absence or presence of menstruation does not necessarily indicate the presence or absence of pregnancy. In suspicious cases, where for some reason or other it is essential to make a diagnosis at once, he suggests the use of the Abderhalden serum reaction, which he thinks is of value in—

1. The early diagnosis of pregnancy.

2. The differential diagnosis between fibromyoma and pregnancy.

3. The diagnosis of chorio-epithelioma.

4. For late puerperal sepsis where it is uncertain whether the uterus still contains placental remains.

This test he thinks is of great value providing gestation has advanced sufficiently far for the ferments to have become elaborated; this may be as early as four, but sometimes not until eight weeks.

Believing that the most common error in diagnosis is frequently made in cases of extra-uterine pregnancy, the author mentions some of the most important signs and symptoms of this condition. There may have been cessation of one or two periods with or without the usual accompaniments of early pregnancy, but more or less pain on one side is often complained of. The cessation may be followed in a few weeks by a continuous or intermittent colored discharge. In other cases sudden acute pain with collapse, followed by rapid and increasing hæmorrhage, is an early sympton. On examination there may be found an alteration in the color of the vagina, an enlarged uterus, rather larger than a two months' pregnancy, and a swelling at the side of or behind the uterus. It is usually stated that the discharge of a distinct decidual cast from the uterus without evidence of a fœtus is a characteristic sign of tubal pregnancy. This is as a rule true, but it must be remembered that such a structure may occasionally be discharged without pregnancy WILLIAM D. PHILLIPS. being present.

Rohleder, H.: Dyspareunia in Women (Die Dyspareunia des Weibes). Arch. f. Frauenk. u. Eug., 1914, i, 141.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Dyspareunia, lack of pleasure in coitus in women, which occurs in 5 to 10 per cent of all women, must not be confused with anæsthesia; that is, lack of sexual desire and frigidity. Sexual desire originates in the ovary, sexual enjoyment in the clitoris.

The etiological points are:

1. Defective excitability of the pudendal nerve which enervates the clitoris.

2. Deficient excitability of the genitocerebral ganglion, also of the genitospinal ganglion.

3. Interruption of conduction by tabes, trans-

verse myelitis, etc.

Defective excitability of the clitoris is the most frequent cause of dyspareunia. It is due to inexperience of the woman, to defloration, to partial vaginismus, and to perverse libido. It may also be caused by certain forms of impotence in the man, premature ejaculation, and by abnormalities in the formation of the penis.

The diagnosis is made—(1) from reports of the

man in regard to sexual coldness of his wife and from reports of the wife in regard to sexual dissatisfaction of the husband; (2) from immediate discharge of the spermatozoa after coitus as a result of defective orgasm; and (3) from sterility.

According to Duncan, 31 per cent of sterile

women have dyspareunia.

The results are hypochondria, melancholia, hysteroneurasthenia, vaginismus, and sterility.

Electrical treatment of the clitoris should be used rather than the suggestion treatment.

MÜLLER-CARIOBA.

# Roulet, A. de: The Occupational Factor in Diseases of Women. Med. Rec., 1915, lxxxvii, 97. By Surg., Gynec. & Obst.

That women do not well endure the strain and hardships of industrial occupations is shown by the low birth-rate and the high death-rate and the frequent subnormalities, both in size and weight, which characterize the children of working mothers.

On account of her more delicate physique, a woman is not fitted for work requiring long-continued physical endurance. A woman under twenty cannot work continuously for ten hours a day in the most sanitary shop without serious injury or without jeopardizing her chance of future usefulness as a woman. Neither her mind nor her body is fully developed, and the long hours, the monotonous work, the chronic exhaustion, the often unhygienic surroundings, to say nothing of the strain of existence on insufficient pay, are not conducive to physical or moral well-being. Labor-saving machinery has added to the burdens of the working woman, since the machine is now used as a means of speeding up production at the expense of the worker's health and strength.

Certain trades are especially undesirable for women, such as those requiring long-continued standing, working in a stooping or bent position, lifting heavy weights, operating heavy machines, violent treadle work, or exposure to extremes of temperature, steam, dust, poisonous dusts and

vapors, etc.

Women do not bear well the strain of long-continued standing, as is required of sales girls, press feeders, and a large proportion of laundry and factory workers. Prolonged standing not only exhausts the worker, but it places an unnecessary strain on the arches of the feet and on the ankle, predisposes to curvatures of the spine, and is a factor of considerable importance in the development of downward and backward displacements of the uterus, of pelvic congestions, and of the various menstrual disorders. Varicose veins of the vulva and legs are common in young women while varicose veins and ulcers are even more common in older women.

In girls from 14 to 20 years old prolonged standing and violent treadle work, such as is required in operating stamping and perforating presses, footpower printing presses, and certain laundry ma-

chines, there is a noticeable effect upon the development of the pelvic bones. At this age the pelvic bones are not hard enough to withstand the almost constant pressure of continuous standing or the impacts of treadle work. EDWARD L. CORNELL.

# Holden, G. R.: Acute Inflammation of the Pelvic Organs. J. Fla. M. Ass., 1914, i, 161. By Surg., Gynec. & Obst.

Two principal types of pelvic infection may be recognized: First, the ordinary type which travels by continuity along the mucosa. This is the usual gonorrhœal type of pelvic inflammation. The second is the true pelvic cellulitis, where the infection is usually more virulent. It travels through the

lymphatic channels.

The treatment of acute pelvic inflammation, the author thinks, presents one of the best arguments for the existence of the gynecologist as distinct from the general surgeon. For example, an acute suppurative appendicitis should be operated upon at once, while an acute salpingitis should but rarely be operated upon. An appendix may often rupture or become gangrenous, while in a tube which is not supplied with terminal arteries the inflammation may subside and it never becomes gangrenous. The treatment for these acute conditions is absolute rest in bed, free catharsis, hot vaginal douches, and an ice-coil over the lower abdomen. A turpentine enema may be of great service when gas is present. Occasionally operation may be indicated in the acute stage on account of retained secundines or because of an abscess in the pouch EUGENE CARY. of Douglas.

#### Lippens, A.: A New Method of Treating Coccygodynia (Un nouveau mode de traitement de la coccygodynie). Gaz. de gynèc., Par., 1914, xxix, 177. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In a patient who was referred to him for operation for coccygodynia after all other methods had failed, the author succeeded by injecting 0.5 ccm. of a 50 per cent solution of antipyrin in alcohol into the third and fourth sacral nerves. He explains the result by assuming that the nerve was destroyed to a certain extent by the alcohol, so that its sensory fibers were rendered incapable of conduction. No interference with motility was observed. In milder cases it may be sufficient to inject the fourth sacral nerve alone.

In the technique it is to be noted that the point of exit of the third sacral nerve is an inch outside the crest of the sacrum and an inch below the posterior inferior spine of the ilium; that of the fourth sacral nerve is a finger's breadth lower. Frankenstein.

#### Reynolds, E.: The Relation of Gynecological Surgery to Bad Obstetrics. Therap. Gaz., 1914, xxxviii, 837. By Surg., Gynec. & Obst.

The author holds that the obstetric methods of today are at fault for permitting exhaustion by

comparatively unrelieved labor, the minor septic infections, and the mechanical injuries which so often result from labor. If labors are allowed to become unduly exhausting, patients almost invariably go through long periods of invalidism or depressed health, even though they may seem to escape the direct local lesions which invite surgical interference. The author notes that such patients. when properly cared for in their next pregnancy and hurried through labor, not only escape the neurasthenia which followed previous labors, but enter upon a new period of greatly improved health.

Great stress is laid on the fact that many of the "chronic tubes" seen by gynecologists originate in obstetric infections which are so slight as to be frequently unrecognized at the time of their occurrence. A moderate rise of temperature, with perhaps a little pain or tenderness on one side or the other, may have been the only symptoms. Such infections may mean much to the future health of the patient. This accounts for the large number of women who are never well after labor because of painful menstruations, slight attacks of abdominal pain, and tenderness and associated nervousness and irritability. The chronic cases of salpingitis are not, according to the author, due in the majority of instances to gonorrhœa, but are obstetric in their origin, and he believes that these can be prevented by the most modern, thorough aseptic method of conducting labor. He believes that a certain proportion of chronic infections originate through accidental contagion by bacteria introduced mechanically from the skin of the vulva and perineum, which means the colon bacillus and other intestinal bacteria. He holds that the condi-tions under which labor is conducted render the occasional occurrence of infections inevitable.

The mechanical misfortunes of labor include tears and displacements. Every woman who has been torn should be examined after the lapse of some months, and should be informed as to the results of the post-partum repair. Reynolds holds that women who go into the change of life with their organs in good condition tend to pass through that process with little or no disturbance of health. Displacements of the uterus of puerperal origin are always complicated by subinvolution of the uterus; hence patients should not be allowed to get up too early. Displacements should be corrected and involution of the uterus should be thoroughly carried out; hence, to permanently relieve displacements, active treatment should be begun immediately after the termination of pregnancy. He believes that if at this time the uterus is held in a normal position until the supports have returned to normal contraction and firmness there will probably be no subsequent displacement. He concludes with the very true statement that many communities are served by gynecologists who know nothing about obstetrics and by obstetricians who know nothing about gynecology.

S. W. BANDLER.

### **OBSTETRICS**

#### PREGNANCY AND ITS COMPLICATIONS

Loizeaux, L. S.: Surgical Diagnosis and Treatment of Extra-Uterine Pregnancy. J. Am. Inst. Homæop., 1915, vii, 796. By Surg., Gynec. & Obst.

The author suspects tubal or ruptured ectopic abortion in all cases of supposed inevitable or incomplete abortion when the collapse and pallor of the patient are out of all proportion to the amount of blood lost. He believes, in such cases where curettage does not give sufficient gestation débris to account for the hæmorrhage or condition of the patient, that they should be looked upon with grave suspicion. A very good sign of much blood in the cul-de-sac is a subnormal temperature sublingually and an elevated temperature rectally.

There can be no doubt that the physician who most often suspects extra-uterine pregnancy in unilateral pelvic conditions in women during the child-bearing age will make few serious errors in the

diagnosis of this condition.

The policy of blaming the danger of ruptured ectopic pregnancy on shock instead of hæmorrhage and arguing against the risk of superimposing the shock of operation upon a patient already in shock—in other words, temporizing—is dangerous in two ways:

(1) it influences the surgeon to consider delay; (2) and, most important, it gives the general practitioner the idea that he is justified in temporizing until a more suitable or convenient time for operation.

Late operations for extra-uterine cases are prone to be followed by slow recoveries and partial invalidism by reason of septic conditions, adhesions, and inflammations consequent to infection or organized

blood-clots and the products of conception.

It is the author's firm conviction that a ruptured extra-uterine pregnancy should be operated upon at the earliest possible moment after the diagnosis has been made and proper conditions and surroundings for laparotomy may be secured. This conviction is based, in part, upon a series of 15 cases personally operated upon without mortality in the Flower Hospital as soon as the diagnosis of extrauterine pregnancy was even fairly well established. The fact that the patient was in collapse and suffering from internal hæmorrhage did not warrant as much delay as in the cases not so desperate.

Where a diagnosis of ruptured ectopic pregnancy is made or strongly suspected, and it is several hours before an operation or proper facilities for operating can be secured, the following measures

are advised:

r. Do not raise the blood-pressure and increase hæmorrhage by stimulation. This is not the time nor place for strychnine or alcohol.

2. Do not give active cathartics or enemata,

or hot applications over the abdomen.

Morphine should be used hypodermatically to quiet pain and excitement, combat the shock, and act as a gentle stimulant.

Saline may be used per mouth, per rectum, or subcutaneously, but never intravenously until the

bleeding vessel is controlled.

The patient should lie in absolute quiet, with the foot of the bed slightly elevated. External heat should be applied to the extremities and the body, with an ice-cap over the lower abdomen.

The conclusions, briefly stated, are:

1. Diagnosis is often obscure and should always be suspected in unilateral pelvic conditions associated with pain.

2. The time of operation should be at the earliest moment following diagnosis that proper facilities and surroundings for laparotomy may be arranged for

3. The route of attack, except in rare cases, should be by laparotomy.

4. Sterilization of healthy tubes is not justified.

The removal of unhealthy tubes is justified.

5. The removal of unhealthy tubes is justified, even though not a menace to health.

EDWARD L. CORNELL.

Walther, F.: Febrile Abortion with Special Reference to Treatment (Über fieberhafte Abort mit spezieller Berücksichtigung ihrer Therapie). Beitr. z. Geburtsh. u. Gynäk., 1914, xix, 325.
By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A report, with tables, is given of the cases of abortion observed at the Strassburg clinic for the past five years, with special emphasis on bacteriology and treatment. There were 834 abortions, 134 of which were examined bacteriologically. From his results the author does not believe in expectant treatment and prefers active treatment in all cases in which the tissues around the uterus are not plainly involved. In 50 per cent of all febrile cases the fever promptly declined after the uterus was emptied, 46.2 per cent of these after the use of the curette, which is so despised by Walther's opponents.

At the Strassburg clinic there was great disappointment with expectant treatment. Too long waiting may have serious consequences, as many cases show. If active treatment is used early, the results are very favorable. If secondary diseases have begun, the mortality is much higher. This shows that active treatment as early as possible is

justified.

The author comes to the conclusion that it is best to empty the uterus as early and as gently as possible, and not to be afraid of the curette, even with hamolytic streptococci. To wait for auto-immunization (Traugott) is useless, for experience has shown that there is no such thing with streptococci.

EISENBACH.

Sselitzky: Anterior Vaginal Hysterotomy in Artificial and Spontaneous Abortion (Hysterotomia vaginalis anterior bei künstlicher und spontaner Unterbrechung der Schwangerschaft). Festschr. f. Prof. Pobedinsky, 1914.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Sselitzky reports 6 cases of vaginal hysterotomy, 4 times in late abortion and once each in missed abortion and hydatidiform mole. He discusses the methods of stimulating pains in abortion and premature delivery. Metreurysis is not very successful in the early months of pregnancy and is sometimes dangerous. In a case of spontaneous abortion in the sixth month metreurysis caused circular rupture of the cervix. Laminaria dilatation also has its faults; the author once observed separation of the cervical mucosa which came out with the laminaria.

Up to the tenth week dilatation with Hegar's dilator followed by curettage is sufficient. In later months anterior vaginal hysterotomy is the method of choice. It is indicated in diseases which demand artificial abortion, such as tuberculosis, diseases of the kidneys and heart, pernicious vomiting and other toxicoses of pregnancy, in pathological changes in the cervix, and in cases where the use of conservative methods does not further the process of delivery. The author does not attempt to settle the question of whether anterior vaginal hysterotomy is indicated in septic abortion.

Jenter.

Plicque, A. F.: Pernicious Vomiting of Pregnancy and Its Treatment (Les vomissements incoercibles de la grossesse et leur traitement). Bull. méd., 1914, xxviii, 645.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Pernicious vomiting of pregnancy is a complication that is frequently quite dangerous for both mother and child. Among 200 cases collected by Pinard 80 mothers died, none of whom had had abortion performed nor came to the hospital in extremis. There were 40 recoveries after spontaneous abortion, 40 after artificial abortion, and 40 recoveries after the usual methods of treatment. The treatment consists in regulation of diet, suggestion, administration of medicines, and treatment with organic extracts and serum. Artificial abortion is a last resort.

Engelhorn.

Jung, P.: Treatment of Threatening Hæmorrhage in Pregnancy (Behandlung bedrohlicher Blutungen in der Schwangerschaft). Deutsche. med. Wchnschr, 1914, xl, 889.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Hæmorrhages in pregnancy may arise from abortion, tumors of the cervix, and rupture of varicose

vessels in the vulva and vagina. As long as there is any considerable bleeding from the uterus the remnants of the abortion which cause it must be removed, even if there is fever. The emptying of the uterus should be done with the index-finger, but without any scratching with the nails. The use of instruments, curettes, or abortion forceps is not advisable on account of the danger of hæmorrhage. If a myoma is causing the hæmorrhage, it should be removed if it has a pedicle. The stump of the pedicle must be well cared for. If the tumor does not have a pedicle, the capsule should be split, the tumor enucleated, and the bed carefully sutured.

The danger of abortion after the operation is slight if the uterus is not handled much and a firm tampon is not applied. Contractions of the uterus should be prevented by suppositories of morphine. In operable cases of carcinoma the uterus should be extirpated without any regard for the pregnancy. Hæmorrhage in inoperable carcinoma should be controlled by excochleation and cauterization.

Radium treatment may also be useful in pregnancy to overcome hæmorrhage and ichorous discharge. If varices of an extremity rupture, a ligature should be placed around them and they should be covered with compression bandages; the vessel should be laid bare later and double ligation should be performed. If varices in the genitals rupture, they should be compressed with a sponge; then, if possible, ligation should be attempted; if this fails, ligation should be done *en masse* and compression accomplished with a T-bandage.

Benthin.

Kubinyi, von: Teratoma of the Ovary and Pregnancy; Laparotomy (Teratoma ovarii neben Gravidität; Laparotomie). Zentralbl. f. Gynäk., 1914, xxxviii, 810.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Laparotomy was performed on a 27-year-old patient because of a rapidly growing ovarian tumor in the second month of pregnancy. The tumor was a teratoma of the right ovary and a radical operation was performed on account of the malignancy of the tumor, although the left ovary appeared normal. Microscopically a beginning teratoma was demonstrated in the apparently normal ovary. Teratomata are extraordinarily malignant, especially in producing metastases.

Ruhemann.

Wolff, P., and Zade, M.: Diagnosis and Prognosis of Kidney Changes in Pregnancy (Zur Diagnose und Prognose der Nierenveränderungen bei Gravidität). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 639. By Surg., Gynec. & Obst.

Among 3,477 deliveries from 1909 to 1913 there were 106 cases of severe disturbance of kidney function; that is, about 3 per cent of the cases. Fifty-two of the cases were eclampsia, 21 of them nephropathia e graviditate—kidney disease arising during pregnancy and caused by it—31 cases of chronic nephritis, and 2 that could not be definitely classified.

The majority of the cases of eclampsia were in primiparæ and a slight majority of the cases of nephropathia e graviditate also, but the majority of cases of chronic nephritis were in multiparæ.

Wolff and Zade conclude that with our present methods of examination the different forms of kidney disease during pregnancy cannot always be differentiated with certainty. During the puerperium and later a chronic nephritis may develop from a nephropathia e graviditate or from an eclampsia.

There is a predisposition to recurrence of nephropathia e graviditate in later pregnancies. Albuminuric retinitis is observed in pure nephropathy and in eclampsia. In chronic nephritis during pregnancy albuminuric retinitis has not the bad prognosis that it has when occurring outside of pregnancy. The retinitis may be caused by nephropathy complicating the nephritis, and may disappear with the former at the end of pregnancy.

A. Goss.

Zoeppritz, B.: Pregnancy and Nephrectomy (Schwangerschaft und Nephrektomie). Ztschr. f. urol. Chir., 1914, iii, 48.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author discusses the relation between the urinary system and pregnancy in general and between diseased urinary organs and pregnancy in particular. Based on an enormous collection from the literature and 18 cases operated upon and observed in Kümmell's clinic, he gives an exhaustive discussion of the prospects for pregnant women who have had nephrectomy performed either before or during the pregnancy, and also the outlook for the child. He concludes that if the other kidney is normal the dangers for neither mother nor child are as great as has formerly been held. There is no increased predisposition to nephritis in pregnancy and no greater danger of the kidney being affected by tuberculosis or other infectious diseases after extirpation of a kidney for tuberculosis or pyonephrosis if a long enough time has elapsed between the nephrectomy and the pregnancy. Also after a sufficient length of time and after a careful examination the resumption of marital relations may be permitted. If a patient who has had nephrectomy performed becomes pregnant, she should be kept under careful medical observation. KNEISE

LABOR AND ITS COMPLICATIONS

Nebesky, O.: Delivery in Contracted Pelvis at the Innsbruck Obstetrical Clinic for the Last Fifteen Years (Die Geburtsleistung bei engem Becken an der Innsbrucker geburtshilflicher Klinik in den letzten 15 Jahren). Arch. f. Gynäk., 1914, ciii, 395. By Surg., Gynec. & Obst.

During the 15 years from 1899 to 1913, 15,998 women were delivered at the Innsbruck clinic, of whom 1,673, or 10.5 per cent, had contracted pelvis.

Detailed accounts, with tables, are given of the various expectant and operative procedures used, with the degree of contraction in the various cases and the mortality for mother and child. The following conclusions are reached:

In both premature and full-term deliveries an effort should be made to deliver with the head presenting. If the size of the pelvis permits the delivery of a mature child at all, it is best accomplished with head presentation. The mortality in breech presentation is ten times as great as in head presentation.

Prophylactic version should be rejected; in the transverse position version should be external and by the head. In primiparæ and contracted pelvis of moderate degree expectant treatment is to be preferred; 78.1 per cent of the cases were delivered spontaneously.

If the history or pelvic measurements indicate that spontaneous delivery is not possible, cæsarean section is the best operation for both mother and child. It should be performed prophylactically; that is, either before or immediately after the beginning of labor pains. It was performed in 21 cases of the series.

The transperitoneal cervical incision of the uterus is to be preferred. If the case is not clean, the child should be sacrificed for the sake of the mother. In many such cases high forceps may save the child from a mutilating operation. If cæsarean section is refused, artificial premature delivery is the next choice.

Spontaneous premature deliveries with children weighing from 2,000 to 2,500 gm. do not endanger the child at all; hence artificial premature delivery is a logical operation. With present methods operations on the uterus are more dangerous for the mother, because of the possibility of infection, and premature delivery more dangerous for the child, because its course after induction is often not normal.

A. Goss.

Kocks, J.: Prolapse of a Hydrosalpinx Following an Attempted Forceps Delivery (Hydrosalpinx, prolabiert durch Zangenversuch). Zentralbl. f. Gynäk., 1914, xxxviii, 902. By Surg., Gynec. & Obst.

The author reports what appears to be the first case of prolapse of a hydrosalpinx following a rupture of the vagina incident to an attempted forceps delivery. Following the application of forceps by a colleague a smooth glistening white mass suddenly prolapsed. This mass was about 5 cm. thick and was mistaken for a prolapsed bowel by the attending obstetrician. In consultation, Kocks diagnosed the mass, from its narrow ends, white glistening surface, and tense walls, a prolapsed hydrosalpinx, although he had never seen one before. As a result of the attempted forceps delivery, the mass had entered the vagina through a rupture in its wall. The forceps had been removed and the head of the child was still in the inlet. To verify the diagnosis he incised the wall of the

mass and a large quantity of light mucus escaped. A few ligatures were used to tie the mass which was then extirpated. Forceps were then reapplied and the still living child extracted. All this was done in the patient's home with a few drops of chloroform as an anæsthetic without further exciting the patient in the least. Complete recovery resulted.

L. A. JUHNKE.

Beach, R. M.: Twilight Sleep. Am. Med., 1915, x, 37. By Surg., Gynec. & Obst.

The author takes up the subject in considerable

detail and cites the following conclusions:

In the first series of 50 cases at the Jewish Hospital, Brooklyn, the following results were procured: complete amnesia, 84 per cent; partial amnesia, 10 per cent; partial failures, 6 per cent; and absolute failures none.

Twilight sleep is a reality. By its means 80 to 90 per cent of all women on whom it is used can be given a painless labor; it has many advantages to the mother, practically no disadvantages to the mother, and the fœtal mortality is less than that by the old method. Also it is a method which requires extreme patience on the part of the trained obstetrician and a minute attention to detail. Each case must be individualized to get good results. Twilight sleep does not claim to be a panacea for all women in labor, as the great bulk of the women of the middle class who are delivered in their private homes by the family physician at a moderate fee will not be able to demand the attention and detail on the part of a trained man to procure this treat-However, in hospital practice, under the proper surroundings and given intelligently, twilight sleep is a scientific reality and will become used more and more as a part of the armamentarium of the expert obstetrician. EDWARD L. CORNELL.

# Hellman, A. M.: How Can the General Practitioner Use Twilight Sleep? Am. Med., 1915, x, 32. By Surg., Gynec. & Obst.

So far most of the work has been done in hospitals, but many men have tried it out, so the author feels sure that before long all men doing any considerable amount of obstetrical work will feel able to superintend a "twilight" case. A dark, quiet room is of great importance, and the average city hospital is the most difficult place of all in which to obtain this. He doubts if the dream of some for "twilight" hospitals all over the country can ever come true; even then there will be some women who will find it necessary to have their confinements take place in their homes. The paraphernalia needed consists of the usual sterile linen, the usual forceps and other instruments that should be on hand at every confinement, a good assistant or specially trained nurse, and the doctor always within easy call.

The author believes that twilight sleep is safe (1) in the hands of the specialist and (2) in the hands of the general practitioner if he will give the subject a little extra study and the patient the necessary

care. By being thus safely used in the home, as well as in the hospital, it certainly should grow to be generally used.

EDWARD L. CORNELL.

Price, N. G.: Side Lights on the Twilight Sleep of Gauss. J. M. Soc. M. J., 1915, xii, 21. By Surg., Gynec. & Obst.

The author describes in detail the physiological action of scopolamine and reviews carefully the results and opinions from various American and European clinics. He states that in 1007 Gauss (Krönig's clinic, Freiburg) reported 1,000 cases with excellent results; the following year Krönig reported a series of 1,500 cases in which one woman died from rupture of the uterus, one child died during delivery, and three others died in the first three days after delivery. He claimed the mortality under scopolamine was less than without its use. On the other hand, he states that Hocheisen reported 100 cases in which the death of one child was directly attributable to scopolamine. Following this it was not until the recent favorable report of 5,000 cases by Gauss that the medical men began to reinvestigate the virtues of twilight sleep. Among the results in recent administrations are the following:

Harrar and McPherson in a series of 100 primiparæ found 66 completely amnesic; 10 had a hazy recollection, but were analgesic; 4 were too far advanced, and 20 failed to respond altogether. They had three stillbirths and 17 forceps deliveries.

Rongy reports 125 cases, of which 104 had complete amnesia and analgesia, 9 were analgesic but not amnesic, 12 failed to respond, and 15 had forceps deliveries.

Heller reports 150 cases with no stillbirths and no

post-partum hæmorrhages.

Williams of Johns Hopkins is quoted as saying that in two separate series his results were not satisfactory, but that he expected to give it a further trial next year.

Prof. Green of Harvard favored morphine narcosis in 1903, but later abandoned it for two reasons: viz., (1) it occasionally caused fœtal asphyxia; and (2) it required too much care for its safe administration.

In a series of 20 cases the author states that his results were fairly satisfactory. He states that as an analgesic, scopolamine acted more or less markedly in every one of the cases. As a somnifacient 16 cases responded, and as an amnesic only 10 cases were completely so; 5 had merely a hazy recollection; and 5 remembered all the incidents distinctly. Scopolamine acted most favorably on those cases which were under its influence no longer than six to eight hours. Because of secondary inertia it was necessary to resort to forceps in 3 cases, all primiparæ; in 2 cases an episotomy was done to prevent laceration of the perineum. In a nephritic case, a primipara, the use of scopolamine was abandoned on account of explosive vomiting; this was the only case which gave signs of gastric irritation. The baby of this parturient died 3 days after delivery with

symptoms of subdural hæmorrhage, which was most likely due to a prolonged second stage. This was the only fatality in the series. WILLIAM D. PHILLIPS.

## Boldt, H. J.: Some Personal Experiences with Scopolamine and Morphine Narcosis. Am. Med., 1915, x, 35. By Surg., Gynec. & Obst.

The author briefly reports his impressions of the use of scopolamine and morphine in general surgery and states that as a preliminary narcotic, when conduction anæsthesia or local anæsthesia are to be made use of, he knows of no agent which is more desirable. At the same time, he sounds a note of warning against its use in instances in which inhalation anæsthesia is to be used. He cites two instances of death from respiratory failure, which were, he believes, attributable to the use of scopolamine and morphine. To utilize this combination similarly to morphine and atropine, or morphine alone, preliminary to the use of ether, as has been done for many years, it is advisable to give but one dose about half an hour before the intended time of operation. He further suggests that the dose be from one-eighth to one-sixth of a grain of morphine with 1/200 to 1/150 of a grain of scopolamine hydrochloride, according to the size of the patient.

He considers this preliminary narcosis is especially preferable in neurotic individuals and in patients who may have organic disease of the respiratory and circulatory organs.

EDWARD L. CORNELL.

### Heller, J.: Some Remarks on the Advantage of Scopolamine and Morphine in the Management of Labor. Am. Med., 1915, x, 58. By Surg., Gynec. & Obst.

With judicious use and with proper precautions the method is safe and free from danger to the life and health of the mother or child. The fear of asphyxiation of the child, post-partum hæmorrhage and psychosis in the mother have no foundation, and if any of these accidents do occur, it is not because of the method, but because the method could not prevent them.

The disadvantages of the method are entirely with the accoucheur and not to the mother or child. It requires his presence at the bedside from the time the treatment is undertaken until the completion of labor, not so much because of any danger, but to keep the patient evenly under anæsthesia on a line midway between consciousness and unconsciousness, for if she is allowed to go above that line in several instances she will have several so-called "isles of memory," and will be able to draw a picture of her labor in her mind and thus lose the benefit of the treatment.

The contra-indications to the method are: (1) primary inertia, (2) expected short labor, (3) a marked disproportion between the fœtal head and the mother's pelvis, necessitating a major obstetrical operation, (4) placenta prævia or accidental hæmorrhage, (5) absent or doubtful fœtal heart

sounds, and (6) active eclamptic convulsions where a rapid delivery is deemed advisable.

The treatment is exceptionally useful in neurotic women with a low power of resistance and in sufferers from heart disease. It is also of service in threatened eclampsia, although it raises the blood-pressure slightly.

Edward L. Cornell.

# Davis, E. P.: Analgesia and Anæsthesia in Labor. Am. J. M. Sc., 1915, cxlix, 57. By Surg., Gynec. & Obst.

The author reviews briefly the various methods in use for relieving the sensation of pain in labor and suggests the following: During the first stage of labor thorough emptying of the bowel by hot high enema, frequent emptying of the urinary bladder, the use of bromides by the mouth, quiet if possible. and comfort for the patient, if it can be secured. Should these measures fail, and the patient be threatened with exhaustion from irritation, morphine and atropine should be given hypodermatically. During the second stage of labor, when suffering is severe and uterine contractions are irregular and evidently lessened by suffering, strychnine 1/60 to 1/30 gr., digitalin 1/50 to 1/100 gr., codeine ½ to 1/4 gr. are given together hypodermatically. This dose may be repeated in an hour. When expulsion is imminent a small quantity of ether is inhaled during the pain; at the moment of expulsion ether is given freely.

Davis states that this treatment has given good results and is followed by no untoward symptoms on the part of the mother or child. He suggests that those interested in the subject of spinal analgesia will find in Gellhorn's paper, read before the American Gynecological Society, an exceptionally clear and accurate statement concerning this matter. Gellhorn gives as his indications for spinal analgesia in gynecological operations any contra-indication for inhalation anæsthesia, and it is the author's opinion that this agrees with conditions present in obstetrical practice.

WILLIAM D. PHILLIPS.

### Bandler, S. W.: The Use of Pituitary Extract in Obstetrical Practice; Some Critical Observations on Twilight Sleep. Med. Rec., 1915, lxxxvii, 55. By Surg., Gynec. & Obst.

Bandler considers pituitrin one of the most potent aids in obstetrics. He calls attention especially to its use in the conduct of the average uncomplicated case. He administers it to the multipara before engagement or dilatation of the cervix, and claims to rarely spend more than two hours at the bedside of a multipara in labor. After the injection of pituitrin, it is risky to leave the patient's bedside. In primiparæ he regularly uses this drug to complete a slow second stage, and has nearly obviated the use of forceps thereby. He uses pituitrin to supplement the action of the Barnes bag in the induction of labor, thus saving the insertion of larger sizes.

In the post-partum stages he occasionally uses pituitrin to hurry involution. He does not consider eclampsia a counterindication to its use. He finds it of value in overcoming bladder atony. In cæsarean operations the drug is injected as the abdominal incision is made. WILLIAM H. CARY.

#### PUERPERIUM AND ITS COMPLICATIONS

Spiegel, R.: Puerperal Tetanus (Tetanus puerperalis). Arch. f. Gynäk., 1914, ciii, 367.

By Surg., Gynec. & Obst.

Spiegel reports four cases of his own and collects all those published in Europe since 1885 and a part of those in America. He gives a table of treatment and results in all the 66 cases. In spite of the fact that the puerperal uterus is a suitable medium for the development of the bacilli, and on account of its abundant blood and lymph supply offers favorable conditions for the absorption of the toxin, the disease is so rare that it is often not correctly diagnosed, and the patients die with a diagnosis of convulsions from puerperal fever or eclampsia.

As the disease is caused by a toxin that attacks the motor regions of the central nervous system, the most rational treatment is high intravenous and intralumbar injection of serum, 400 to 100 units at a dose, to neutralize the toxin circulating in the body and not yet fixed in the nervous system. If no serum is available, the progress of the intoxication can be limited by blood-letting, followed by lumbar puncture and the injection of salt solution. Adrenalin injections are also said to have an inhibitory effect on tetanus toxin.

The place of origin of the toxin must be excluded as far as possible by cleansing the wound and by douching and curetting the uterus. Seventy per cent alcohol is the best fluid for douching, as the toxin is precipitated in the alcohol. After the curettage and douching the uterus is tamponed with an antitoxin tampon. Symptomatic treatment should be given for the convulsions, the best method being the intraspinal injection of 5 to 10 ccm. of a 15 per cent solution of magnesium sulphate.

A. Goss.

#### MISCELLANEOUS

Hüssy, P.: A Simplified Method of Performing Abderhalden's Pregnancy Reaction (Eine Vereinfachung der Schwangerschaftsdiagnose nach Abderhalden). Zentralbl. f. Gynäk., 1914, xxxviii, 897. By Surg., Gynec. & Obst.

The firm of Hoechst has succeeded in making a dried placental albumin put up in small tubes of 0.5 gm. and 25 gm. to do away with the laborious method of preparing the placental albumin. For each test one little tube is used. The substance has been tested by the author with the ninhydrin reaction and has been found satisfactory, corresponding in 28 cases with the original method. The only disadvantage found is the fact that the fine powder adheres to the dialysis shells and is removed with difficulty. To overcome this the firm is now making a powder of a coarser grade.

The advantages are self-evident, and if sufficient tests prove the reliability of the substance a more general application of the test may be looked for,

L. A. JUHNKE.

Labhardt, A.: A Frequent Early Sign of Pregnancy (Über ein häufiges Frühzeichen der Schwangerschaft). Zentralbl. f. Gynäk., 1914, xxxviii, 1017. By Surg., Gynec. & Obst.

The author describes a sign of pregnancy occurring as early as the fourth or fifth week, even before the livid discoloration of the vagina. It consists of a transverse band, livid in color, running from one lesser labium to the other in the region just below the urethral opening. The author believes that it is due to a congestion of numerous small vessels running between the bulbi vestibuli on either side. These vessels lie directly beneath the mucous membrane, and during the hyperæmia incident to pregnancy are the first to show the congestion. Although this is not necessarily due to pregnancy, it is, like the livid discoloration of the vagina, an early sign which may be of considerable value in numerous cases. L. A. JUHNKE.

Esch, P.: A New Skin Reaction in Pregnancy: Some Remarks on the Work of Engelhorn and Wintz (Über eine neue Hautreaktion in der Schwangerschaft; einige Bemerkungen zu der Arbeit von Engelhorn und Wintz). München. med. Wehnschr, 1914, lxi, 1115.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author reported similar experiments two years ago consisting in intracutaneous injection of fœtal serum, fluid expressed from the placenta, and albumin or globulin precipitated from this. The results of these experiments showed at most a quantitative difference in the reaction of pregnant and non-pregnant individuals. He secured the same results with cutaneous vaccination, which he thinks is far inferior to the intracutaneous. He thinks it remarkable that the "placentin" prepared by Engelhorn and Wintz cannot be used for intracutaneous injection, while they got such extraor-dinarily favorable results from it by cutaneous vaccination. He can only attribute this difference in the results to the peculiar methods used by Engelhorn and Wintz in preparing the extract of placenta, which they have not yet described.

ALBRECHT.

Giusti, G.: The Decidual Reaction in the Cervix and Adnexa and Pelvic Peritoneum During Uterine Pregnancy; Its Mode of Origin (La reazione deciduale sul collo dell' utero, sulgli annessi e sul peritoneo pelvico durante la gravidanza uterina e suo modo di produzione). Ginecologia, 1914, x,

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The decidual reaction is produced by morphological elements which are similar to the decidua of the body of the normal pregnant uterus and which like the latter undergo the same transformation cycle. The reaction is due to the secretion of lutein substance, which also stimulates the formation of decidual elements outside the mucous membrane of the uterus, but only at those places which

are subjected to special stimulation.

The decidual reaction is observed most frequently during the last third of pregnancy; it is entirely lacking or occurs only to a slight degree before that time. The reaction is most frequent in the cervix, more rare in the ovaries and pelvic peritoneum, and it is lacking entirely or occurs only rarely in the tubes. The elements of the reaction originate from the connective tissue of the stroma; origin from the perithelium could not be entirely excluded.

GATTORNO.

Gentili, A.: The Internal Secretion of the Decidua (Über die innere Sekretion der Decidua). Zentralbl. f. Gynäk., 1914, xxxviii, 1159.

By Surg., Gynec. & Obst.

Schottländer is of the opinion that the decidua plays an important rôle in the formation of protective ferments which split up placental albumin. In this manner he believes the paradoxical reactions, that is, the positive reactions in the non-pregnant, can be explained. Many authors have proved that decidual changes analogous to those occurring in pregnancy occur in the uterine mucosa during the antemenstrual phase. If we consider that an analogy exists between the antemenstrual state and the pregnant state, and if we believe that the decidua of pregnancy is the source of fermentative activities, then it becomes plausible to believe that many paradoxical (positive) results of Abderhalden's reaction must be attributed to the antemenstrual period in which these women are. The above-mentioned protective ferments would also depend upon the various elements of the ovaries during their periodical monthly activity or during pregnancy. On the basis of this theory Schottländer attributes an important internal secretory function to the decidua. He therefore does not attach much significance to the theory of Veit and others that the production of ferments is due to the migration and absorption of chorionic villi elements throughout the Although he has no proofs he speaks of the morphologic similarity of lutein and decidua cells, of their similar development, of the renewed secretory activity of the elements after termination of pregnancy, in which the glandular epithelium takes on the form of large epithelial lutein cells.

This corroborates in theory the work of Gentili on the internal secretion of the decidua brought out some time ago. According to him there is still other proof of an internal secretion of the decidua; viz., the fact that the decidual change during pregnancy occurs not only at the site of implantation but also far away from it, within as well as outside of the uterine mucosa. The existence of an intimate relation between the normal course of pregnancy and the presence of a corpus luteum has not been generally accepted, owing to the difference

between the clinical and experimental evidence. In guinea pigs, however, a destruction of the corpora lutea causes an interrupted pregnancy; whereas this never or only very rarely is the case in the human. The explanation may be that the internal secretion of the highly developed decidua may act vicariously for that of the corpus luteum; whereas, this is impossible in guinea pigs in which there are usually multiple corporal lutea and a poorly developed decidua. Furthermore, the view in regard to the characteristics of the decidua cells is supported by the discovery of the "glande endocrine myometriale" in animals. This has been still further corroborated by injections of decidua extracts, possessing characteristics and producing actions in animals similar to those produced by the usual organic extracts. Toxic doses produce a thrombosis intravitally; less than toxic doses increase the resistance against poisonous extracts; and, lastly, the acutely fatal action of this extract can be inhibited by the addition of an equal quantity of homologous serum. Entirely independent of the toxic effect of decidua extract there is always a marked action upon the blood-pressure, producing a sudden drop. Very small, less than toxic, doses produce this effect. Corpus luteum extracts produce the same phenomena — but with much less intensity - which are entirely independent of the general toxic action of organic extracts. Decidual extracts have a similar action upon the frog's heart. L. A. JUHNKE.

Zuckmayer, F.: Woman's Milk During the Early Period of Lactation; the Influence on Its Composition of Increased Administration of Calcium and Phosphoric Acid (Über die Frauenmilch der ersten Lactationszeit und den Einfluss einer Kalk- und Phosphorsäurezulage auf ihre Zusammensetzung). Arch. f. d. ges. Physiol., 1914, clviii, 200.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In order to study more accurately the question of whether it is possible to increase the richness in calcium of mother's milk by giving calcium during pregnancy or post-partum, Zuckmayer performed a series of experiments, giving pregnant and puerperal women tricalcol, a colloidal tricalciumphosphate casein, with their food and analyzing the milk chemically. On examining the milk of 26 women for the first ten days of lactation, excluding the first day, he found great individual variations in the calcium and phosphoric acid content, which could not be equalized by giving calcium and phosphoric acid after delivery or during the last two months of pregnancy. But if given throughout pregnancy there was undoubtedly an effect on the milk, in contrast with the cases in which they were given only after delivery. The average calcium content increased about 10 per cent, and the number of cases in which the calcium content was more than 0.4 gr. per kg. was increased about 72 per cent. The values for phosphoric acid, nitrogen, and ash were also increased. FRANKENSTEIN.

Williams, J. W.: Limitations and Possibilities of Prenatal Care. J. Am. M. Ass., 1915, lxiv, 95. By Surg., Gynec. & Obst.

Prenatal care is complicated and inextricably connected with the work of the obstetric hospital. It is not merely a matter of a few visits by a nurse to the patient in her own home. It should consist in the coördination of the medical, nursing, and social service resources of the hospital and an effort to obtain such treatment and supervision for the mother as will offer the greatest possible guarantee for the safe delivery of a normal child, which can be

kept healthy by maternal nursing.

The foundation of the paper is the study of 705 feetal deaths which occurred in 10,000 consecutive admissions to the Obstetrical Department of the Johns Hopkins Hospital—6,500 indoor and 3,500 outdoor cases. In this series all deaths occurring in children born between the seventh month of pregnancy, the so-called period of viability, and full-term have been included, as well as those occurring within the first two weeks after delivery. For convenience, the children were classified as premature or mature, according as their weight varied between 1,500 and 2,500 gm., or exceeded the latter figure. Of the 705 deaths 334 were in the former and 371 in the latter category.

These figures are somewhat less than the total mortality, as they do not include many children who died later. Furthermore, it must be borne in mind that they do not necessarily represent the results which may be obtained in private practice, but are based on the material entering a large general hospital, which includes many women who had been improperly treated at home and were admitted to the

hospital in desperate straits.

Moreover, the material differs from that of many institutions in that 4,600 of the 10,000 mothers were colored, thereby making it possible to compare the incidence of certain causes of death in the two races. The statistics are of unusual value for two reasons: First, that every one of the 10,000 after-births in the series has been carefully described and subjected to routine microscopic examination—a procedure which sometimes yields most important information; and secondly, that most of the dead babies were subjected to autopsy.

The striking features of the investigation are: 1. Syphilis is by far the most common etiologic factor concerned in the production of death, pre-

senting an incidence of 26.4 per cent.

2. Toxæmia, including eclampsia, nephritis, and occasional rare conditions, which is usually regarded as the condition *par excellence* which can be influenced by prenatal care, is the cause of only 6.5 per cent of the deaths and, consequently, is accountable for only one-fourth as many as syphilis.

3. Notwithstanding most painstaking investigation, the cause of death could not be satisfactorily

explained in 127 cases, or 18 per cent.

4. The death rate is nearly twice as high in the blacks as in the whites, 9.4 and 5.1 per cent respect-

ively, and equals or exceeds that of the whites in all but three categories: namely, toxæmia, deformities,

and placenta prævia.

Regarding prenatal care in syphilis, the author states that mere education in sexual matters can do but little good for the class of patients concerned. What is necessary is to recognize the disease in the mother at the earliest possible moment and then subject her to appropriate antisyphilitic treatment in the belief that the drug administered to her will be transmitted to the child and effect its cure. The difficulty lies in making the diagnosis. Not more than one-fourth of the women present lesions. In the remaining three-fourths the condition is usually unsuspected until a dead child is subjected to autopsy or a living child develops symptoms of hereditary syphilis. The Wassermann test is out of the question because of its expense. The birth of a dead baby should always be regarded with suspicion.

In dystocia the intelligent application of prenatal care in its broadest sense offers great promise of better results. Pelvic abnormalities and excessive size or abnormal presentation of the child cannot be detected or remedied by the most intelligent prenatal nurse. Their recognition will be possible only after all women are educated to go to a competent obstetrician or to a well-regulated obstetric dispensary for a preliminary examination one month before the expected date of confinement. If abnormalities are found, the woman should enter a hospital for delivery and the public should be taught to realize that safety is to be found only in ideally organized obstetric hospitals. Too many sins of omission and commission are now covered by the hospital roof, and in many the sense of security is illusory, as the woman may be treated by short-term assistants, who are often less competent than the much-maligned practitioner. These women should not be delivered in their own homes by a doctor or midwife, or even by the outdoor service of the hospital, as their safety and that of their babies depends on the expert service which can be obtained only in a well-regulated hospital.

Prenatal care and instruction offer great possibilities for the diminution in the number of deaths due to prematurity. In her visits to the homes of ignorant and overworked women, the prenatal nurse can prevent many premature labors by giving instruction in personal hygiene, insisting on rest and abstention from excessive work during the later months of pregnancy, and, where imperfect nutrition is manifest, by putting the woman in touch with

appropriate agencies for relief.

For some years the prevention of toxæmic conditions has been recognized as one of the main functions of prenatal care and has accomplished great good. Every practitioner knows how difficult it is to induce even intelligent women to send specimens of urine for examination at regular intervals, and that it is practically impossible in the type of women who come to the obstetric dispensary. Consequently, one of the most important functions

of the prenatal nurse is to follow up the patients in this regard and, when abnormalities are detected. to see that the women enter the hospital for prophylactic or curative treatment.

In an obstetric department, such as indicated, the prenatal work should be conducted primarily from the dispensary, which should serve as the portal of entry for all prospective patients, irrespective of whether they expect to be treated in the hospital or in their own homes.

The first requisite for such a dispensary is that it should have proper quarters, an ideal personnel, and adequate financial support. The purely medical work should be under the direct supervision of the director of the hospital and should be carried out by medical men who are sufficiently well trained to make a reliable diagnosis. A considerable proportion of them, at least, should be assistants living in the hospital, in order that the work of the indoor and outdoor departments may be satisfactorily coordinated. In addition to the medical assistants, the necessary number of nurses should be in attendance to care for the ordinary needs of the patients, but more important is the requisite number of prenatal nurses. These should be graduate nurses with considerable obstetric experience, who have also had a certain amount of training in social service work.

Patients should be encouraged to go to the dispensary as early as possible in pregnancy. After registration a careful physical examination should be made and its results recorded. This should not be limited to purely obstetric conditions, but should include the entire body, with especial reference to syphilis and tuberculosis and the condition of the kidneys. At this visit blood should be withdrawn for a Wassermann test should anything in the physical examination or the previous history of the

patient indicate its necessity.

If everything is apparently normal, and the patient desires it, she may be tentatively registered as an outdoor patient, to be eventually delivered in her own home; otherwise she should be registered as a

prospective hospital patient.

In either event she should be instructed to report to the dispensary at stated intervals so long as she remains well and to bring a specimen of urine at each visit. She should also be given a card containing concise directions concerning the hygiene of pregnancy and mentioning the important untoward symptoms which might supervene. Should such be

noted, she should report at once.

At the first visit to the dispensary the prenatal nurse should arrange to call on the patient at her own home within a week. At this visit she should make a social survey of the surroundings and determine whether the patient is a proper object for charitable care. If the surroundings are not suit-able, the patient should be persuaded to enter the hospital for delivery. The nurse should also amplify the printed directions concerning the hygiene of pregnancy and impress the woman with the necessity of suckling her baby.

After this initial visit, an important part of the duties of the nurse is to keep track of the patient by means of a card index and, in case she does not return to the dispensary within one week of the appointed time, to visit her again in order to ascertain why she failed to keep the engagement.

Every patient should return to the dispensary for a final examination one month before the expected date of confinement, and the decision as to whether she is to be delivered in the hospital or in her own home will in great part depend on the findings at that time. In the latter event she should be visited again by the prenatal nurse in order to ascertain whether the necessary arrangements have been made for the approaching confinement. Ordinarily, further visits will not be necessary until after the child is born, but a visit should be made just after the student and post-partum nurse cease their visits. This is necessary partly to check up the work of the outdoor service, but principally to put the patient and her baby in touch with the children's clinic with instructions to take the baby to it should necessity arise, and on returning to the hospital the nurse should register the child at the children's clinic or with the "milk-fund" nurse, so that it can be followed up by the proper agencies.

In the case of patients entering the hospital for delivery, the prenatal nurse's work usually ceases with the visit made one month before delivery, as the subsequent supervision will devolve on the nursing staff of the hospital. On the day before the discharge the mother and baby should be taken to the children's clinic for registration, so that the baby may be under its supervision for the next year.

Prenatal care does not necessarily end here, as it is necessary to take thought of what may happen in future pregnancies, as well as of the preservation of the general health of the mother. Consequently, when the existence of syphilis is not discovered until after the birth of the child, a mechanism should be developed which will ensure proper treatment, either under the auspices of the obstetric service or in some special department of the hospital. bring this about without unnecessarily going into details concerning the disease will often require great tact and will tax the resources of many nurses. Furthermore, when patients are discharged with conditions ultimately requiring operative treatment, but which could not be undertaken during their stay in the lying-in ward, an attempt should be made to see that they ultimately return to the obstetric department or to some other department of the hospital for the necessary operation, both for their own sake and for that of their unborn children. EDWARD L. CORNELL.

Lovegren, E.: Further Blood Findings in Melæna Neonatorum (Weitere Blutbefunde bei Melaena neonatorum). Jahrb. f. Kinderh., 1914, lxxix, 708. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In the first case the bleeding began at the end of the second day of life; it was a very severe hæmorrhage, threatening life. After an injection of gelatin it stopped. The restoration was comparatively quick in spite of the preceding severe collapse. In the second case the bleeding began at the end of the third day. It was a relatively mild case of melæna. The treatment was expectant;

the recovery spontaneous.

The blood findings in the first case showed that the coagulation time slowed during the hæmorrhage; the red blood-cells showed no tendency to rouleau formation and showed certain morphological changes, such as early thorn-apple forms and These changes disappeared differences in size. after the retrogression of the symptoms of melæna. Rouleau formation gradually became normal; morphological changes could no longer be seen; the coagulation time was shortened. The author is inclined to think that the disturbance in coagulation and the morphological condition of the red blood-cells stand in a causal relation to the origin and course of the disease. The blood findings in the second case showed rapid and good rouleau formation; no morphological changes of the red cells; coagulation time not slowed.

Lovegren explains the difference in the two cases by saying that the defensive forces of the body were weakened in the first case, and were only called forth or strengthened by the treatment, while in the second case the body had protective forces at its disposal at once. These blood findings are in accord with the clinical picture of the disease and with the pathological-anatomical changes found in it, so that they tend to support the hypothesis according to which melæna neonatorum is caused primarily by a change in the coagulation chemistry of the blood. These findings may be useful in the future in determining the prognosis and treatment of the disease.

Eisenbach.

Reinhardt, E.: Contagious Pemphigus Neonatorum (Über Pemphigus neonatorum contagiosus). Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxvi, 14. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Reinhardt reports 23 cases of pemphigus neonatorum which were observed in the course of six months. The course in the majority of the cases was tolerably benign and the skin affection recovered spontaneously in a short time, but three children died from a general infection through the denuded corium. One child with umbilical hernia and ectopy of the bladder died later of pneumonia. There was a 22 per cent mortality.

A detailed description is given of this infectious disease, the nature of which is not yet clear; it attacks only the newborn, never the mothers or adults. The author discusses the pathological anatomy, the clinical course of the disease, its differentiation from syphilitic pemphigus, the question of the exciting cause, which is not yet known, the post-mortem findings in the children who have died, and the treatment. The best treatment is abundant powdering of the vesicles and especially the exposed corium with dermatol and binding the affected parts of the body with Bardeleben's bismuth bandage for burns.

MORALLER.

Holt L. E. and Babbitt E. C.: Institutional Mortality of the Newborn. J. Am. M. Ass., 1915, lxiv, 287. By Surg., Gynec. & Obst.

Ten thousand consecutive births at the Sloane Hospital for Women in New York form the basis of this report. These cases occurred during a period of six and one-half years, ending October, 1913. They were divided as follows:

Abortions	 253
Stillbirths	 . 429
Living births	 . 9,318

This hospital receives but few waiting women; nearly all are admitted after labor has begun. Patients are regularly discharged on the fourteenth day and complete mortality records are, therefore, possible only for this period. In many cases infants who were ill, premature, or not thriving were kept for a longer time. Some interesting facts regarding hospital mortality during a period longer than fourteen days are presented in this report.

The total deaths occurring in the first fourteen days were 291, these being 3.1 per cent of infants born alive. Of these deaths, 159, or 54.6 per cent, occurred in infants born prematurely; 132, or 45.4 per cent, occurred in infants born at term. Prematurity must, therefore, be recorded as the largest single factor in infant mortality of this period.

The following tabulation gives the exact time of death in premature infants and those born at term:

death in premature manes and those both at	CALLE.
Premature Full-term	Total
Died on first day	140
Died on second day 8 10	18
Died under one week	233
Died during second week 22 34	56
EDWARD L. CORNELL.	

### GENITO-URINARY SURGERY

#### KIDNEY AND URETER

Williams, T. A.: The Syndrome of Adrenal Insufficiency. J. Am. M. Ass., 1914, lxiii, 2203. By Surg., Gynec. & Obst.

Williams, on account of the perversion or ahormone of secretions of ductless glands, covers the question of suprarenal insufficiency in cases of socalled neurasthenia, in which definite somatic disturbances are ascertainable; where the pelvic adnexa and abdominal viscera are inflamed; where there is disordered metabolism with arterial hypertension, early cerebrospinal lues of the paresis type, and disordered glandular function, especially from the thyroid.

He differentiates hypo-adrenalism from psychasthenia, melancholia, nosophobia, and hypochondriasis, yet the line of demarcation is not abruptly drawn in his case histories. Cannon is quoted as showing that the adrenal vein contains a greatly increased amount of glandular secretion following fright, with the hypothesis that a prolonged hyperadrenalism will superinduce hypo-adrenalism.

The pathology in the suprarenal gland is thought to be a destruction of the glandular substance or cortex. The medullary change should not be especially harmful on account of accessory chromaffinbody tissue.

He divides the cases into (1) improved or curable; (2) non-improved; (3) fatal. Eight cases are reported; five were cured or improved, one was not improved, and two ended fatally.

The treatment consisted of psychologic therapy with hygienic environment, active out-door exercise, two to four grains of adrenal substance twice daily.

Cases 5 and 6 presented interesting dissimilar results from their treatment. The former was worrying because of impotency and a six-months' marriage contract confronting him. After treatment potency returned which was followed by marriage.

In Case 6, also, a love affair aggravated the condition, which treatment and marriage did not improve.

In the discussion the claim was made that glandular products procured from animals castrated during their early youth suffered in quality on account of the deterioration of the animals, also that hormone is never single but poly- or multiglandular. Williams considers that not all endocrinian disorders are pluriglandular. C. E. BARNETT.

Freyer, P. J.: The Symptoms and Diagnosis of Stone in the Urinary Tract. Practitioner, Lond., By Surg., Gynec. & Obst. 1914, xciii, 745.

Freyer discusses at length the symptoms of calculus in the urinary tract, bringing out a few

interesting facts in regard to hæmorrhage. makes the following divisions:

1. If it comes on gradually it is a sign of stone in the bladder; when it is sudden or profuse it is not.

2. In bladder-stone the hæmorrhage occurs at the end of micturition, the earlier portions of the stream being clear.

3. Exercise increases and rest diminishes hæmor-

rhage from the bladder.

From Freyer's paper, the conclusion is drawn that there is no pathogenic symptom of calculus of the bladder, and that while the symptom-complex is perhaps worthy of study, yet the cystoscope and a careful examination of the bladder by means of it is the only reliable method of studying bladderstone.

He describes in detail the method of introducing and use of the cannula, and how by means of the Bigelow aspirator water is alternately forced into and out of the bladder; the stone will thus be drawn up with force against the eye of the cannula and a diagnosis made in this way.

If these methods of diagnosis all fail, in some cases stone can be found in the trabeculæ of the bladder

The question of renal calculus is discussed, and the point is emphasized that very small calculi produce severe renal colic, while the large ones produce a heavy dull aching pain in the side. point is made that frequently stones in the ureter elude the X-ray. Freyer says that when the stone is implanted in the lower inch or two of the ureter it may sometimes be felt by the finger introduced into the rectum in the male or into the vagina in the female, the fingers of the other hand making counterpressure above the pelvis. A. C. STOKES.

Kelly, H. A., and Lewis, R. M.: Diagnosis of the Particular Form of Hydronephrosis Due to Movable Kidney. Surg., Gynec. & Obst., 1914, xix, By Surg., Gynec. & Obst.

Kelly and Lewis report and discuss a case of chronic intermittent hydronephorsis due to movable kidney. The case is of particular interest, in that it is one typical of a class in which exact diagnosis is possible. As both history and physical examination were unsatisfactory and insufficient to establish a diagnosis, the right ureter was catheterized and it was soon discovered that the function of the kidney on that side was far below normal; only the smallest trace of phenolphthalein, previously administered hypodermatically, was excreted in one and one-half hours. Eighty cubic centimeters of sterile boric acid solution were injected into and recovered from the pelvis of the kidney without causing pain.

The following day the right ureter was again catheterized and 10 cubic centimeters of a 5 per cent and 50 ccm. of a 1 per cent silver iodide emulsion were slowly run in. A radiogram was then taken, after which some solution escaped by the catheter

and some was washed out.

The radiogram shows the ureter distended with the silver iodide emulsion from the tip of the catheter up to a point one centimeter below the renal pelvis. The large dilated pelvis lies plainly outlined above. Between the pelvis and injected ureter is an area in which the silver iodide has not manifestly lodged. This evidently represents the site of the obstruction, which is due, not to the presence of a stone, but to a kinking of the ureter just below the renal pelvis.

A diagnosis of chronic intermittent hydronephrosis was made and the right kidney removed.

At operation the kidney was found to be enlarged to a mere shell. The pelvis was readily exposed, and, as expected, a right-angle kink was found in the ureter just where it had its origin. The ureter itself was adherent to the lower surface of the pelvis for a distance of one and one-half centimeters. It then bent sharply downward in its normal direction.

The ureteral lumen was opened just below the kidney, but none of the contents of the renal pelvis escaped until the dense adhesions doubling the ureter onto the pelvis were dissected free. A gush of watery fluid containing particles of silver iodide then followed, and in this way the mechanism of the obstructing valve was clearly demonstrated. The arrangement of the parts was like that of the structures at the internal inguinal ring designed to prevent hernia. Here, unfortunately, the valve proved itself all too competent and ended by bringing about the destruction of the kidney.

Section of the kidney showed but a rim of cortex. The hydronephrotic sac contained a considerable amount of the injected silver iodide emulsion. This is contrary to the usual experience that in the injection of the pelves and ureters of actively functionating kidneys all traces of the iodide are generally removed within forty-eight hours.

### Cunningham, J. H.: Acute Unilateral Hæmatogenous Infections of the Kidney. J. Am. M. Ass., 1915, lxiv, 231. By Surg., Gynec. & Obst.

The pathological processes originating in the so-called acute unilateral hæmatogenous infections of the kidney are divided into (1) those with abscess formation and (2) diffuse inflammatory processes without breaking down of tissue.

In the first class, a single kidney with multiple miliary abscess formations from which malignant toxemia results, the organ must be sacrificed in

order to save the patient's life.

In the second class the type of diffuse acute unilateral inflammation of the kidney cannot be so clearly defined, and must depend upon the course of the disease in the individual case. When operation is undertaken in this class, nephrectomy is not the only procedure to be employed. Favorable results have been obtained by simple decapsulation; by puncture of the infected areas, with drainage; by splitting the kidney, closing the kidney wound by suture; by decapsulating the organ or by decapsulation and drainage of the kidney pelvis, as in the cases of this class which he has reported in the original article.

The clinical picture is discussed in detail together with the report of a number of cases. I. S. Koll.

Buerger, L., and Lautman, M.: Concerning Mixed Tumors of the Kidney. Am. J. Surg., 1914, xxviii, 453. By Surg., Gynec. & Obst.

Buerger and Lautman give a detailed account of the gross and microscopic pathology of a mixed tumor of the kidney whose structure throws some light on the question of the origin of these growths. Characteristic for mixed tumors of the kidney is the simultaneous occurrence of two or more varieties of derivatives of the mesoderm, including smooth and striped muscle, cartilage, fat, elastic fibers, myxomatous and fibrous connective tissue together with the inclusion of certain epithelial elements and fat. Many authors have regarded these neoplasms as derived from rests of the wolffian body, but when we remember that many of the tumor elements are not constituents of the wolffian body, we are forced to seek elsewhere for a satisfactory elucidation of the problem of origin.

The authors call attention in a review of the embryology to the fact that in the fœtus certain structures, namely, the mesodermic somites and the intermediate cell mass, bear a close relation to each other. These mesodermal somites consist of numerous cells arranged around a central cavity which soon disappears. The cells of the somites are gradually arranged into three sets, the muscle plate, the scleratogenous layer, and the subepithelial or cutaneous lamella. The cells of the muscleplate layer lose their epithelial-like character and give rise to the striped muscle of the body. The scleratogenous layer is responsible for many of the skeletal tissues, including, of course, the production of cartilage. The cutaneous lamella (mesenchyme) contains cells that undergo histological differentiations and are utilized in the formation of the cutaneous tissues, the connective tissues, smooth muscle, and bone. From the mesenchyme originate myxomatous, fibrillar, cartilaginous, osseous types of connective tissue, the lymphoid apparatus, smooth muscle, and possibly even vessels and blood. In the intermediate mass develops the wolffian body. Hence in the myotome, in the scleratogenous layer, in the mesenchyme; and in the intermediate cell mass are found structures that afford the possibility of origin of mixed tumors of the kidnev.

In the authors' case—a tumor which complicated a hydronephrotic kidney—only adipose tissue, fibrillar connective tissue, smooth muscle, and vessels were found, a combination which is unique and which still further supports the contention of Wilms that the mixed tumors are not derived from the wolffian body alone; for in this particular specimen only such tissues are included as could be derived from the mesenchyme, the intermediate mass, or wolffian body, being not at all represented in the make-up of the growth. This circumstance speaks in favor of the correctness of the assumption that the mesodermal somites, with possibly the intermediate cell mass, are responsible for the origin of mixed tumors, the theory that rests of the wolffian body are wholly engaged being untenable.

Krotoszyner, M.: Differential Diagnosis of Nephrolithiasis and Renal Tuberculosis by Röntgenography. J. Am. M. Ass., 1914, lxiii, 2006.

By Surg., Gynec. & Obst.

Krotoszyner discusses the differential diagnosis of nephrolithiasis and renal tuberculosis on the basis of radiography, and reports in this connection

the following interesting observations:

r. A case of so-called total tuberculous putty-kidney (Kittniere), in which the plate, about 4 cm. below the huge and very dense kidney-shadow, demonstrated an oblong smaller shadow, which through its location and difference in density could be recognized as a ureteral stone.

2. A case of scattered calcified tuberculous foci looking exactly like stone-shadows, which appeared on the right kidney plate of a man of 41, who was brought to the hospital in deep uræmic coma. The operation and post-mortem in this case demonstrated marked tuberculosis of both kidneys.

3. The case of a woman of 44, with a right-sided pyuria and intermittent attacks of renal colic, in whom cystoscopically an entirely normal bladder was found, while apparently typical stone-shadows appeared on the plate of the right kidney-region, which, at operation, were found to be due to calcified tuberculous foci of the kidney on that side.

Another source of error in the diagnosis may arise from the possibility that a shadow seen on the plate is cast by an object outside the kidney.

The author concludes that in the absence of other characteristic diagnostic data the correct differential diagnosis of renal lithiasis and tuberculosis, through radiographic evidence alone, is only feasible in total putty-kidney, while scattered tuberculous calcified foci are, as a rule, not differentiable from calculus shadows. Pyelography may at times be a valuable aid in the radiographic diagnosis, although, on account of its dangers to the patient, it is not destined to become a routine measure.

King, E. L.: The Necessity of More Careful Study of Renal Function Prior to Operation. N. Orl. M. & S. J., 1914, lxvii, 528.

By Surg., Gynec. & Obst.

Five cases of death from post-operative suppression of urine where ether was used, coming under the personal observation of the writer, have brought him to the conclusion that there is a necessity for more careful study of renal function prior to operation, and he suggests the following various methods:

I. The study of the nitrogen elimination, and of the freezing point of the urine or the blood.

2. The use of dyes injected intramuscularly or intravenously, such as methylene blue, indigo-carmin, or phenolsulphonephthalein.
3. Use of various drugs, such as phloridzin or

potassium iodide.

4. Experimental polyuria. These are the chief tests, but there are many others, and all have their uses and limitations: hence Stevens recommends the use of three tests simultaneously: viz., the urea, phloridzin, and phenolsulphonephthalein used successively at the same sitting. Experience has shown that the use of one of the tests mentioned will, as a rule, give very reliable evidence as to the functional ability of the kidneys. Fisher, however, questions this on theoretical grounds and Ware thinks that the phenolsulphonephthalein test is practically useless. A great majority of those who have worked with the phenolsulphonephthalein, however, are of the opinion that its evidence is reliable and valuable, and it is easily applied. The technique of this test is simple and the apparatus is inexpensive: a good Luer syringe, a few test tubes, one or two 1,000-ccm. cylinders, a colorimeter, the phenolsulphonephthalein, and some 10 per cent sodium hydroxide solution.

The drug is injected, preferably intravenously; the time of appearance in the urine is noted, and the excretion for the first two hours after this time is estimated by the use of the colorimeter. This should be from 65 to 75 per cent of the amount injected, in a patient with normal kidneys. In case there is marked diminution in the amount excreted, operation should be deferred, if possible, until a more careful study can be made, or some other form of anæsthesia should be used, not ether. At any rate, the surgeon and the patient or his family could know the condition beforehand.

In conclusion King urges that all patients be more carefully examined, especially the middle-aged or elderly, in order to discover hidden renal disease. The blood-pressure and the cardiovascular apparatus should be studied. The functional tests can be easily applied and should be used in all questionable cases. The single urinary examination the morning of the operation performed hastily by an overworked interne is practically valueless. Even though these precautions should be useless in four-hundred ninety-nine cases, they would probably save the five-hundredth.

H. A. Moore.

Pedersen, V. C.: Limitations of Functional Tests of the Kidneys. Tr. Am. Urol. Ass., Baltimore, 1915, April. By Surg., Gynec. & Obst.

Pedersen emphasizes the general importance, especially surgically, of modern functional tests of

kidney with insistence on, not the isolation of, one or more tests, but the correlation of all recognized methods, including polyuria, indigo-carmin, phenolsulphonephthalein, phloridzin, estimation of urea in the urine and blood, and possibly the relation of blood-pressure observations to the other tests. All these must be associated with complete urinalysis for physical, chemical, microscopical, and bacteriological data.

Each test considered in turn dismisses the polyuria method as chiefly of value in securing a correlation between the excretion of the water imbibed and the dye administered during the same periods of time. The quantity of dye excreted in a large flow of urine, as is sometimes seen in polyuria tests, should be computed on the quantity and not the percentage basis, by multiplying the total fluid by the percentage of dye present; otherwise misleading observations would result in that the better kidney would seemingly excrete the largest quantity of

fluid but the smallest percentage of dye.

In the phenolsulphonephthalein test the author's method of subdivision is described, by which each specimen is divided into equal parts, of which half is sent to the laboratory for analysis and half employed for determining the percentage of dye excreted; such readings manifestly are to be multiplied by two in correction of the subdivision. Where the percentage of dye is seen to be so low that accurate reading by the ordinary scale is impossible, the author's method of subdilution is used. By this method the specimen is raised not to 1,000 but to a prime factor of 1,000, so as to concentrate the color, preferable to a reading between 50 and 100. Such reading of the scale is, therefore, to be divided by the number of times the said prime factor is contained into 1,000 in order to bring the reading up to the basis of the dilution to 1,000, which is standard. The indigo-carmin test is judged as of chief value in corroboration of the phenolsulphonephthalein test, in cases in which the latter is not strictly available, and in patients in which the time of excretion of the dye from each side is a matter of importance; but the value of the orange color given to acid urine by the phenolsulphonephthalein is pointed out as having great merit in the majority of instances. Acidulation of alkaline urine with dilute hydrochloric acid followed by alkalization with the hydrate of soda or potash will avoid the peculiar dirty brick-red color in alkaline urine due to the presence of loose ammonium compounds, and will render it as easy to obtain correct readings in alkaline urine as in acid urine.

The phloridzin test is to be regarded as the least reliable because often the better kidney is much the less permeable to this substance under the influence of the diseased organ, and the technique is therefore not a method of choice. The author believes that the estimation of urea in the urine and blood should be made, not by the determination of the freezing points, which requires expensive and cumbersome apparatus, but by the application of

urease, a glucoside of recent discovery and great promise as to accuracy. The chief point to remember is that the amount of urea excreted by each organ in a given period of time is much more important than the percentage, exactly as in the case of dyes, especially in the presence of a polyuria test correlated with the other tests, which on the mere percentage basis might give misleading results.

Blood-pressure is of value in many cases in that it rises with the ingestion of the water and injection of the dye and falls in a regular rate with the excretion of both if at least one kidney is competent. All the foregoing tests lose a large if not the greatest part of their value unless all the specimens secured are submitted to standard laboratory examination, physicially, chemically, microscopically, and bacteriologically; and these in turn must be checked up by the examination of twenty-four-hour specimens always before and preferably also after the other tests, under the influence of rest in bed, free catharsis, and antinephritic diet in order to eliminate extraneous and uncertain factors. Pedersen believes that this combined method of thorough investigation of the kidney function is the only one which will endure the test of time and experience.

# Braasch, W. F., and Thomas, G. J.: The Practical Value of Chemical Tests of Renal Function in Surgical Conditions of the Urinary Tract. J. Am. M. Ass., 1915, lxiv, 104.

By Surg., Gynec. & Obst.

The authors review their use of chemical tests in surgical conditions of the kidney in order to form an estimate of the practical value of such tests (1) for the purpose of determining the efficiency of the remaining kidney, (2) for the estimation of renal capacity in cases of renal obstruction, and (3) as an aid in the diagnosis of doubtful lesions of the kidney. Their observations and conclusions are based upon their experience with phenolsulphone-phthalein, as they consider that it has more virtues than other tests of like character and at the same time is representative of all the fallacies of chemical tests of renal function.

Of 485 cases at the Mayo Clinic requiring nephrectomy, 10 died as the result of the operation, insufficiency being the cause of death in but one case. The authors' review of necropsy data indicates that deaths from renal surgery more often result from faulty technique or infection than from insufficiency of the remaining kidney. They call attention to the fact that when one kidney is badly damaged the functional capacity of the other may be reflexly low. The fundamental weakness of all functional tests when used as prognostic aids is that while they may show the functional capacity at the time of examination they cannot foretell the capacity after operation, and reliance is better placed upon careful cystoscopic examination and clinical data to determine the efficiency of the remaining kidney.

The authors have studied 168 cases of urinary

obstruction, in which repeated tests would seem to indicate that an arbitrary operative danger line of 20 per cent output, as mentioned by many writers, cannot be laid down. They cite 11 operated patients with an output of less than that amount with only one death, that being due to cardiac insufficiency. On the other hand, they report 2 cases having an output of 75 per cent, whose deaths were evidently due to kidney insufficiency. They conclude that the clinical evidence of renal insufficiency after the usual course of pre-operative treatment is of greater importance than the functional test and should determine the advisability of prostatectomy. In proof of this a series of 97 prostatectomies without a death is cited.

They think the greatest value of the functional test is its aid in the diagnosis of renal and ureteral lesions, as renal stone, ureteral stone, hydrone-phrosis, renal tumors, renal tuberculosis, renal infection, bilateral cystic kidney, essential hæma-

turia, and atrophic kidney.

Usually the output is low in cases of renal stone, but they cite cases with a good amount of good tissue which have shown a low output, the same cases having a practically normal output after the removal of the stone.

They have found the test of value in estimating the comparative degree of renal destruction in bilateral nephrolithiasis, but in one case of bilateral stone the secretion was the same from both sides; nephrectomy was found necessary because of the marked destruction of one kidney. In cases of bilateral stone showing a low combined output in two hours the advisability of operation is doubtful.

In ureteral stone equal function does not always exclude the possibility of stone in the ureter; diminution of secretion is of particular value in

only a small percentage of cases.

In hydronephrosis of considerable size they find a marked diminution; but in the small hydronephrotics in whom the functional test might be of diagnostic value there is but little difference in secretion.

In cases of renal tumor the classical symptoms of blood, pain, and tumor usually suffice for diagnosis; in the absence of bleeding, marked diminution from one side suggests intrarenal lesion. In 29 cases examined, diminution was found in but 9. Infected neoplasms show a greater diminution, but in these cases cystoscopic evidence should be the basis for diagnosis.

In 14 cases of essential hæmaturia no diminution of function was found. Diminution on the offending side would indicate a surgical condition.

The authors think the functional test not infrequently applicable to the following conditions: (1) renal tuberculosis with hæmorrhage and without other clinical or cystoscopic evidence; (2) renal neoplasms which cause no recognizable tumor; (3) renal stone with negative röntgen-ray findings; (4) chronic pyelonephritis; but any of these conditions may be present without marked diminution of function.

Diagnosis could be made from clinical evidence in every case of atrophic kidney. Except where diminution is very marked, the chemical test is not of diagnostic value in cases of renal infection. Cases of this kind with marked signs of insufficiency have been known to show no diminution of function. The test is of great importance in cases of early renal tuberculosis with marked comparative diminution. The authors have observed cases of bilateral tuberculosis with high output in two hours. but have noted several cases of unilateral infection with a combined output of only 25 per cent. They do not find it of value in estimating which of two tuberculous kidneys is the more infected. In their experience, if cystoscopy fails to determine from the urine secreted which kidney is largely destroyed, operation is contra-indicated. The authors cite a few cases of perinephritic abscess, in two of which the functional test isolated the diseased kidney; in one there was no diminution in a kidney badly diseased. In polycystic kidney diminution occurs only when there is considerable destruction of tissue. In 7 cases, only 2 showed an output of less than 40 per cent. They found the test of value in comparative estimation of the two kidneys.

The authors conclude by saying: "We should like to emphasize that it is not our purpose to belittle Geraghty and Rowntree in their thoroughly scientific efforts to establish a chemical estimate of renal function. The phenolsulphonephthalein test, because of its ease of application and rapidity of secretion, remains as probably the best functional test at our command. Nor is it our purpose to detract from the value of a careful examination of the character of ureteral secretion in surgical conditions of the upper urinary tract. It is our contention, however, that the fundamental surgical principles and clinical data should determine whether or not an operation is indicated, and that renal functional tests are of practical value largely as an aid to differential diagnosis and only to a

limited degree as a prognostic aid."

Thayer, W. S., and Snowden, R. R.: A Comparison of the Results of the Phenolsulphonephthalein Test of Renal Function with the Anatomical Changes Observed in the Kidneys at Necropsy. Am. J. M. Sc., 1914, cxlviii, 681.

By Surg., Gynec. & Obst.

As a result of a very careful analysis of a considerable number of cases in which it was possible to compare the results of the phenolsulphonephthalein functional kidney test with the actual morbid changes present in the kidneys the authors conclude that the test is of considerable diagnostic and prognostic value. In not a single instance did they meet with a case with a good phthalein elimination in the presence of severe chronic cases of nephritis.

Their cases are grouped under the heads of advanced chronic nephritis, chronic nephritis of moderate extent, severe acute nephritis, amyloid

kidney, hypernephroma, and chronic passive congestion, and in all these classes it was found that there was a marked decrease in the phthalein output, which in most cases was progressive and proportionate to the severity of the lesions. Of these types of cases the first seemed to give the most marked and uniform reduction in elimination; yet even in these, absolute values could not be placed on the results of the test, as instanced by the fact that 7 days before death one patient in this class had an output of 18 per cent, while another 72 and 62 days before death is credited with an immeasurable trace.

In cases of chronic nephritis of moderate extent, even when death was imminent, there was a much smaller reduction in the output, and the test seemed to be of less prognostic value. The three cases in which tests were made in closest proximity to the time of death, namely, 1, 9, and 12 days, gave percentages of 16, 39.5, and 42 respectively. In chronic passive congestion the prognostic significance appeared to be less than in true nephritis, though there was usually some reduction in the S. W. MOORHEAD. output.

### Huggins, R. R.: Decapsulation of the Kidney. gins, N. W. N. J., 1915, ci, 70. By Surg., Gynec. & Obst.

Huggins reports several cases of severe nephritis consequent upon acute infections, in which he performed the decapsulation operation of Edebohls. These cases all showed very remarkable symptomatic improvement, which was, however, only of short duration. Functional kidney tests were much better following operation also. He believes that the operation may be indicated in the following conditions:

I. Toxic nephritis following acute poisoning by

mercury or carbolic acid.

2. Nephritis following infection, especially acute infectious diseases where there is marked œdema or uræmia. Its use should be considered early, as medical measures have been thoroughly tried without relief, especially in young adults and children.

3. In severe hæmorrhages in chronic nephritis, when unilateral; also in uræmia and anuria.

4. In eclampsia when improvement does not follow delivery.

5. In movable kidney associated with albumin J. S. Eisenstaedt. and casts.

### Luckett, W. H., and Friedman, L.: Pyelography in the Diagnosis of Traumatic Injury of the Kidney. Ann. Surg., Phila., 1914, lx, 729. By Surg., Gynec. & Obst.

The authors give a very interesting discussion of the value of pyelography in cases of traumatic injury of the kidney. They report three cases and give the pyelographic findings.

In the first two cases the diagnosis of ruptured kidney was made by pyelographic findings on account of the position which the silver salt took in the region of the kidney pelvis. An operation confirmed these findings in both cases.

In the third case the pyelographic shadow showed that the collargol remained within the calyxes of the kidney. An operation was not indicated and

the patient recovered.

The authors claim that the pain of injection of the collargol in the ruptured kidney is quite different from that caused by injection when the kidney pelvis is intact. In the ruptured kidney it is a dull pressure pain referred to the lumbar region, while in the pelvis intact it is a colicky pain. They are of the opinion that the shape of the pyelographic shadow is of great value in making a diagnosis as to whether or not a kidney is ruptured.

A. C. STOKES.

### Gelpi, M. J.: A Case Exemplifying the Value of Pyelography. N. Orl. M. & S. J., 1914, lxvii, 535. By Surg., Gynec. & Obst.

Gelpi reports a case of hydronephrosis which occasioned periodic attacks of pain, and which could be readily palpated at certain intervals and then again disappeared entirely. The enlargement was very great at times and reached five inches below the costal arch. Cystoscopic examination and catheterization of the ureters were negative, although functional tests with phenolsulphonephthalein showed delayed excretion and reduced amount from the right kidney, it showing only 2.5 per cent in the first two hours, while the left excreted 11 per cent during the same interval.

X-ray plates after injection of the pelvis with 15 per cent collargol demonstrated on the right side a large hydronephrotic kidney caused by kinking of the ureter. Nephropexy was done and recovery was complete, there being no symptoms of tumor J. S. EISENSTAEDT. present.

### Eisendrath, D. N.: The Effects of Collargol as Employed in Pyelography. J. Am. M. Ass., 1915, lxiv, 128. By Surg., Gynec. & Obst.

Prompted by the reports of ill effects upon the kidney and even death following the injection of collargol into the renal pelvis, Eisendrath undertook a series of experiments on dogs, carefully measuring the quantity injected and the pressure employed. His article is illustrated with microphotographs of pathological lesions produced in the kidneys themselves and other lesions more remote,

such as lung embolism.

He found that in those experiments in which the quantity of collargol injected did not exceed the capacity of the pelvis and in which practically no pressure was used there were practically no deposits in the kidney and no damage to the epithelium. When the pressure and quantity were increased, the collargol was found frequently either in one kidney or both; in one case it was found in the bloodvessels of the kidney. He therefore concluded that collargol will not damage the kidney if no more is injected than the pelvis readily holds; but that if this limit is exceeded or the fluid is injected with too much force, then deposits occur in the kidney parenchyma, there are infarcts or hæmorrhages into the spleen and liver, or various lung changes are caused, such as hæmorrhage, œdema, or pneumonia. I. S. EISENSTAEDT.

Keyes, E. L., Jr., and Mohan, H.: The Damage Done by Pyelography. Am. J. M. Sc., 1915, cxlix, 30. By Surg., Gynec. & Obst.

As the result of experimental injection of collargol into the renal pelves of dogs the authors came to

the following conclusions:

Momentary gentle distention of the normal pelvis of the kidney causes no more damage than a brief congestion, but if the distention persists for a few minutes the injected fluid is absorbed into the blood-vessels and lymph-spaces about the kidney pelvis. The authors regard the appearance of the collargol within the glomeruli and tubules as a

secretory phenomenon.

Of far greater importance, however, than the primary retention at the time of injection is the possibility of a secondary infiltration due to retention of collargol in the renal pelvis as a result of ureteral obstruction. This secondary retention is the cause of most of the deaths that have been reported from pyelography. Alarming symptoms following injection into the renal pelvis should be relieved by immediate drainage of the kidney or by nephrectomy. The presence of collargol in the kidney parenchyma, as shown by radiograph or by operation, should not be a cause of apprehension, though it shows that the injection has been made with too much force. The collargol may enter the general circulation and be distributed to the other kidney and elsewhere, in some instances at least, and yet no great harm result.

H. L. SANFORD.

Buerger, L.: Unusually Large Ureteral Calculi.
N. Y. M. J., 1914, c, 1103.

By Surg., Gynec. & Obst.

The author reports two of his own cases of enormous calculi of the ureter. In the first case the calculus measured 10 cm. in length and filled a large portion of the middle and lower third of the left Its presence had produced a marked hydronephrosis. Removal of the kidney and the ureter was followed by prompt recovery.

In the second case the calculus was situated near the lower end of the right ureter and measured two inches in length by one and one-eighth inches in width. It also had produced a hydro-ureter and hydronephrosis. The patient refused nephrectomy, and removal of the calculus was followed by re-

covery.

The author concludes from the study of these cases that (1) enormous stones can be formed in the ureter as a result of deposition of salts about an arrested ureteral calculus acting as a nucleus: (2) such large calculi may give no history of ureteral

colic, most of the symptoms being referable to the results of ureteral dilatation and hydronephrosis; (3) catheterization of such ureters is possible; (4) even in cases where infection of the hydronephrosis or hydro-ureter has taken place, primary union may be obtained without any leakage following removal of the calculus from the ureter. H. L. SANFORD.

### BLADDER, URETHRA, AND PENIS

Allen, C. W.: The Use of Clamps in Resection of the Bladder; Report of a Case. N. Orl. M. & By Surg., Gynec. & Obst. S. J., 1914, lxvii, 523.

The treatment of malignant tumors of the bladder is, in the great majority of cases, a difficult and unsatisfactory undertaking. Simple growths, particularly of the papillomatous type, promise to yield good results when treated by the high-frequency current, but further time is needed to definitely settle to what extent this treatment can be depended upon. In malignant growths this treatment is not indicated and operative means must be depended upon for its relief. If seen early by the surgeon these cases of malignancy offer a fair prospect of ultimate cure, depending upon the type of growth, its location and extent.

Occasionally the development of some symptoms, such as profuse or continuous hæmorrhage, compels an emergency operation, such as was necessary in the case treated by the author. Undoubtedly the best method of procedure would have been the resection of that portion of the bladder surrounding the growth, but in view of the patient's weakened condition and extreme exsanguination it was out of the question to perform this by the usual method. With rapid and feeble pulse and shallow respirations she was threatening to collapse on the table. consequently a more rapid yet effective method of dealing with the situation was demanded. Allen was accordingly enabled to put into effect an idea which he had had in mind for some time. Two stout clamps having curves at right angles to the shank were selected. These were tested to determine their dependability. The tissues on each side of the base were then caught by Ochsner clamps and pulled up into the field for some distance. This ridge of tissue was then grasped in opposite directions and below the bite of the Ochsner clamp by the curved clamps. Their application, as well as the unfolding of the bladder wall, was guided by one hand beneath the bladder. When both clamps were securely in position and well clasped, with their tips in contact, the mass of tissue within their grasp and to which the growth was attached was cut away with the actual cautery. A Pezzer catheter was then passed through the urethra into the bladder, the incision into the bladder closed, except at the fundus, where an opening was left through which protruded the handles of the clamps. The abdominal incision was closed up to the bladder, which was sutured to the posterior sheath of the rectus. The patient was quite weak following this ordeal, but rallied well.

All nausea and vomiting ceased and there was no further hæmorrhage. Remarkably little discomfort was occasioned by the clamps in the bladder; one was removed on the third day and the other the day following. There was no hæmorrhage or other symptoms following their removal. The patient left the hospital in three weeks with instructions to report for examination in two or three months.

H. A. MOORE.

### Rytina, A. G.: The Radical Removal of the Verumontanum. J. Am. M. Ass., 1915, lxiv, 45. By Surg., Gynec. & Obst.

The author reports having removed the verumontanum in eighteen cases and describes the instrument he has devised for this purpose and his technique. From these specimens he has had an opportunity to study the anatomy, histology, and pathology of the organ which he describes. In none of these cases has the patency of the ejaculatory ducts or the patient's sexual appetite been affected.

The author states that his experience does not yet warrant him in expressing an opinion as to the clinical value of the operation, but he believes it is a more effective method of treating neuroses and chronic infections of the posterior urethra than topical applications or the use of the thermocautery.

H. L. SANFORD.

#### GENITAL ORGANS

## Barrington, F. J. F.: Spontaneous Hæmorrhage into the Testicle. Brit. J. Surg., 1915, ii, 400. By Surg., Gynec. & Obst.

The author reports a case of this rare condition, and cites 13 cases from the literature.

The symptomatology of the author's case is given in detail, as well as the local findings before operation. A histological report is given, describing in detail the changes which occurred in the testicle as well as the associated changes in the epididymis. Not only were there hæmorrhages in the testicle, proper and in the epididymis, but also in the cord behind the epididymis. The hæmorrhage occurred in the absence of injury, disease of the blood or vascular system, or any of the known causes which locally interfere with the testicular circulation.

In only 2 of the 14 cases was any congenital anomaly of the testicle present. Barrington states that it is possible, however, that this does not represent the true proportion in which such anomalies occur in these conditions, for strangulation of an undescended testis from various causes is so much more frequent than strangulation of the normally situated one that the condition would be much less likely to be reported.

In 12 out of the 14 cases the age was between fourteen and twenty-five years, which would seem to point to the fact that this is a disease of young adults. The left side was affected 10 times and the right 4. In 3 cases there was a history of a remote injury. Considering how common such

accidents are, the author believes that it is unlikely that injury has any etiological significance. Symptoms suggesting a previous attack were present 5 times in the 14 cases. One of the most characteristic findings in the histories is the fact that these patients had a fulminating onset. It is also significant that in most of the cases the onset came at night during sleep. This would seem to be more than a mere coincidence.

The pathological findings in all the cases indicate that for some reason interstitial hæmorrhages occur into a previously healthy testis. Aseptic necrosis of the parenchyma follows, presumably from increased pressure inside the more or less rigid tunica

albuginea.

Where a large percentage of these cases had a history suggesting previous attack from which they recovered it might be well to give patients the benefit of this fact before performing a castration.

HERMAN L. KRETSCHMER.

# Butt, A. P., and Arkin, A.: Malignant Disease of the Retained Testicle. J. Alumni Ass. Coll. Phys. & Surg., 1915, xvii, 106.

By Surg., Gynec. & Obst.

After referring to the paper of Bulkley, in which that author states that cases of malignant disease of retained testicles constitute but one in 60,000 male hospital admissions, Butt and Arkin report a case seen by them in which both testicles were so diseased. The left testicle, which was the one obviously affected, weighed three and one-half pounds; the enlargement had been noticed for six months. The right testicle was found deep in the pelvis, and was 25 per cent larger than normal. The pathological examination of the two testicles showed them both to be the sites of mixed tumors, sarcocarcinomata.

S. W. Moorhead.

### Turner, P.: Double Retained Testicle in Which the Left Testicle was Transplanted to the Right Side of the Scrotum and the Right Testicle to the Left Side. Proc. Roy. Soc. Med., 1915, viii, Sect. Dis. Child., 17. By Surg., Gynec. & Obst.

Turner reports a case of double inguinal hernia with imperfectly descended testicles in a patient twelve years old. Both testicles, which appeared to be ill-developed, could be palpated in the inguinal canals; they had never descended below the

external abdominal rings.

The following operation was performed: The right sac and spermatic cord were exposed by a small incision through the external oblique just above the internal abdominal ring. The hernial sac was separated from the vas and veins as far as the internal ring and there ligated. By traction on the distal part of the sac the testicle was drawn through the small incision in the external oblique. The sac was then ligated immediately above the tunica vaginalis and removed. The remains of the gubernaculum were then transfixed, ligated, and divided, the ends of the suture being

left long. The testicle, enclosed in the tunica vaginalis, was then quite free, except for its connection with the spermatic cord. An incision about an inch long was then made over the front of the left side of the scrotum. The free ends of the ligature transfixing the gubernaculum were then seized with Spencer Wells' forceps, which were then introduced through the incision in the external oblique, pushed along the inguinal canal, through the external ring, into the right side of the scrotum. The ends of the forceps were then made to impinge against the scrotal septum. A small incision was made on the forceps through the wound in the left side of the scrotum; the forceps carrying the ligature was pushed through to the left side and the ends of the ligature secured. The forceps were withdrawn and by pulling in the ligature the right testicle was drawn along the track made by the forceps along the inguinal canal through the scrotal septum to the left side of the scrotum. Both wounds were then closed.

The patient was readmitted two months later and the left testicle was then transplanted to the right side of the scrotum by a similar operation.

No sutures were necessary for the fixation of the testicle in its new position, the contraction of the opening in the septum preventing its return and exercising a gentle continuous traction which is absent in the ordinary method of orchidopexy.

The advantages of transplantation to the op-

posite side of the scrotum are as follows:

1. The testicle is transplanted to the well-developed side of the scrotum, where there is much better accommodation for it than on the ill-developed side.

2. It is usually possible to effect the transplantation without dividing the vessels of the cord.

Sutures to fix the testicle in its new position are unnecessary, and the organ itself is not damaged during the operation.

4. When the testicle has been drawn through the septum in the scrotum, the small opening contracts; hence the weight of the scrotum acting through the septum exerts a continuous slight force tending to keep the testicle in its new position.

5. The operation is carried out without dividing the external abdominal ring and with the least

possible damage to normal tissues.

EDWARD L. CORNELL.

# Hinman, F.: The Operative Treatment of Tumors of the Testicle; Report of Thirty Cases Treated by Orchidectomy. J. Am. M. Ass., 1914, lxiii, 2009. By Surg., Gynec. & Obst.

Within the last ten years reports have appeared of 42 attempts to remove the testicle and its primary lumbar lymphatics according to the clear and definite anatomical findings of all of the modern and radical principles in the surgical treatment of malignancy. In justification the results of this procedure have never been analyzed in comparison with the mortality results following simple castration. The

purpose of Hinman's study is to determine from a review of the literature and an analysis of the cases of the Johns Hopkins Hospital the true value of castration and to compare this with the results that have followed the use of the radical operation, the particular object being to determine whether the radical operation is ever justified, and if so under what conditions.

Mere removal of the testicle had been regarded as virtually hopeless until Chevassu in 1906, reported 19 per cent cures in 100 cases following castration. Few other statistics of satisfactory or reliable data have appeared since Chevassu's classical analysis, although some more recent authors have become unduly optimistic of the result of orchidectomy. A careful analysis by Hinman of 32 cases treated by castration at the Johns Hopkins Hospital gives a cure of only 15 per cent. Half of 18 cases, of which the pathological material was personally examined, were embryonal carcinomata, half, teratomata; sarcoma was not found—which corresponds to the recent (1911) pathologic findings of the study of Ewing.

This high mortality has stimulated surgeons to seek more radical treatment. Hinman describes with illustrative charts the lymphatic drainage system of each testicle and the steps of procedure in its radical removal. The reported cases are analyzed in detail with respect to duration, clinical presence of metastases, metastases which were absent clinically but found at operation, number of cases inoperable because of the extent of metastases which were clinically absent, the probable cures, and the ultimate mortality. His summary and

conclusions are as follows:

1. Orchidectomy will cure from 15 to 20 per cent of teratoma testes. Obviously a cure is possible only when the testicle is removed before the onset of glandular or other metastases.

 A cure cannot be assured until nine years after operation, although the danger of recurrence after four years is very small—only three cases

reported—and progressively diminishes.

3. Cancer of the testicle metastasizes in practically every case, first and primarily to a limited zone of lumbar lymph-nodes which lie on the aorta for the left testicle and on the vena cava for the right, between the bifurcation of the aorta and the renal pedicle. Communication between these two groups and to deeper and more distant glands occurs only secondarily.

4. Involvement of these primary lymph-nodes may occur early or late, and the pre-operative duration of the tumor in the testicle, its rapidity of growth, or its size give no definite clinical indication of the onset or extent of such metastases, but the probabilities increase the longer the duration and

the more rapid the growth.

5. Pathologic differentiation of tumors of the testes into embryonal carcinomata and mixed-celled types is more or less arbitrary, as both are teratomatous in origin; but the former appears to be

definitely less likely to metastasize, although more rapid in its growth. There are fewer cures among the cases of teratomata, although these give the

longest duration before death.

6. The primary lymph-nodes are a very imperfect guard against secondary invasion, and metastases to other gland areas by way of efferent lymph-channels or by blood-vessels to thoracic or abdominal organs may occur early. Surgical treatment is of no avail after these secondary metastases have occured. The only hope, therefore, in a radical operation is the removal of the testicle with its primary lymph area before the disease has spread beyond this zone.

7. The experience of various surgeons in a total of 46 cases has demonstrated in suitable cases the feasibility and technical ease of the radical operation with a combined surgical mortality in all cases of

only 11 per cent.

8. Radical operation should never be undertaken when lumbar metastases are recognizable clinically, and it is applicable only in the fairly early cases in which the disease is apparently limited to the primary zone. Owing to the deep position of the glands, these cases cannot always be differentiated before operation, so that every case in which clinically there is no invasion is suitable for radical treatment. The operation should never be performed until after the diagnosis is confirmed.

9. Sufficient time has not elapsed and the cases are so scattered that it has not been possible to get the ultimate results in all of the patients treated radically. Forty-six per cent are alive; I for five years; I for four years; 5 for almost three years; 2 for over two years; and II for one year or less. There is a probable cure in at least 4 cases which had lumbar glands invaded with cancer at the time of the operation. Simple castration could not have benefited these cases, and their cure is directly attributable to the early and clean removal of the affected lymph area.

10. In conclusion, therefore, it may be stated that early removal of the testicle with its primary lymph zone is the rational method of surgical treatment of teratoma testes; but the extensive nature of the operation and the fact that almost one-third of the cases thus treated were found to be inoperable, because of the extensive glandular invasion, warrants a very careful selection of suitable cases.

### Barnett, C. E.: Suprapubic Prostatectomy. J. Am. M. Ass., 1914, lxiii, 2273. By Surg., Gynec. & Obst.

On account of the mortalities occurring, Barnett believes few operators are satisfied with their technique in prostatectomy. He believes that the operator should use the technique that he himself is most familiar with regardless of other men's fads and fashions, and during the operative procedure should endeavor to combine gentleness with thoroughness and simplicity.

Four principal reasons for the suprapubic route

are: (1) The danger of the pus-bathed perineal tube forcing infection into the torn open-mouthed veins, thereby producing emboli and thrombi. (2) The greater ease of local anæsthesia in the suprapubic region. (3) Avoidance of trauma through the pelvic diaphragm. (4) Ease and simplicity of postoperative treatment.

Non-irrigation for hæmorrhage and chronic colitis are post- and pre-operative subjects discussed. He considers that chronic colitis is a hazard not suffi-

ciently appreciated.

A case is cited showing the advantage, from the standpoint of shock and lack of toxæmia, of using

local anæsthesia alone.

Several years ago he spoke of the importance of chronic colitis having an important influence in prostatectomized patients, and he still believes that the subject does not receive the general attention it deserves. Old prostatic cases generally have indolent constipated bowels, which are influenced by the renal toxemia which from the years of pathology has induced a chronic inflammation of the colon. This colic pathology is aggravated by, and itself superinduces, gas distention, which opens up another field for toxic absorption, which, added to the overloaded kidneys, is another factor causing dissolution.

Paschkis, R.: Preliminary and After-Treatment in Prostatectomy (Vor- und Nachbehandlung bei Prostatektomie). Wien. klin. Rundschau, 1914, xxviii, 255.
By Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.

In the first stage of hypertrophy of the prostate, operation is seldom advisable, and it is necessary only in cases where there is frequent, tormenting, and painful desire to urinate day and night, which cannot be influenced by conservative treatment. The patients come for operation most frequently during the second stage for chronic complete and incomplete retention and insufficiency of the bladder. Even then operation is indicated only when the patients are obliged to resort to continuous catheterization. Patients in the third stage of hypertrophy with overdistention of the bladder and ischuria paradoxa need a preparation of weeks before operation can be considered.

Prior to every prostatectomy there should be a careful examination of the entire body, arteriosclerosis, hypertrophy of the heart, and of course the condition of the bladder and kidneys are of especial importance. If there is an infection in patients in the first or second stage a catheter is applied; this is changed every second day, and the bladder irrigated when necessary. In overdistended bladder, in the third stage, it is emptied gradually, at first the catheter being used only once daily, and later twice to three times daily, never more than 200 ccm. being removed at once, with a gradual increase, so that in about four weeks the bladder can be completely emptied without danger of hæmorrhage. Then a permanent catheter is inserted, and the rest of the treatment is as in the first and second stages. For the sake of testing function the 24-hour amount of urine should be measured, the specific gravity determined, the nitrogen and chlorides at intervals of a day, and the indigo-carmin test applied. Cryoscopy of the blood is also of importance, and cases in which the other functional tests and the freezing-point test give unfavorable results should be excluded from operation. The size of the prostate has no significance in the indications for operation.

General anæsthesia is to be preferred as a general rule, but if there are special contra-indications Braun's local anæsthesia should be used. The transvesical operation through a median long incision is the best procedure; but in especially difficult cases and in fat men a suprasymphyseal transverse incision with incision of the recti muscles is The prostate is bored through and enucleated digitally after the mucous membrane is incised. This is rendered easier by counterpressure through the rectum. After the operation is completed the field of operation is irrigated with 2 liters of salt solution, and the edges of the bladder wound are drawn together on the right and left by a strong silk suture passing through all the layers; the suture, however, is not tied. The bladder wound is sutured with catgut sutures except for an opening large enough to insert a drain as large as the thumb with a right-angled glass tube attached. An iodoform gauze strip is introduced into the prevesical space, also two strips in the bladder to support the tube. The fascia and skin are sutured. A compression dressing is applied, large tampons being placed on the perineum and above the wound.

The after-treatment consists in suction of the urine by von Schlagintweit's method. The dressing is first changed on the fourth or fifth day and at the same time the bladder strips are shortened; the prevesical strip is left until the seventh day. After a week the drain is replaced by a smaller one, or is fully removed and a permanent catheter applied, and then the first bladder irrigation is given. In infection of the suprapubic wound or any other complication, such as epididymitis, urethritis, etc., where a permanent catheter is not feasible, Paschkis recommends the Irving capsule. The only conservative operations worthy of consideration are the formation of a suprapubic fistula, and, in the cases not adapted to operation, the use of a permanent catheter. MÜNNICH.

### MISCELLANEOUS

King, E. F.: Myiasis of the Urinary Passages. J. Am. M. Ass., 1914, lxiii, 2285.

By Surg., Gynec. & Obst.

The author reports a very interesting rare case of dipterous larva commonly known as the "latrine fly" in the urine of a farmer. The author quotes Rene Chevrel's analysis of all reported cases of myiasis of the urinary passages; only twenty such cases have been reported.

The patient, a man aged 32, while at work in his garden, was seized with an intense desire to urinate, hurried to a shed and urinated in a glass kept for the purpose, felt something pass with the urine and found the larva in the glass. Two hours later the larva was received at the office in a perfectly fresh condition for examination. He had voided similar objects with the urine twice before but had not had them examined. L. O. Howard, entomologist of the U. S. Department of Agriculture, identified the specimen.

Churchman, J. W.: Examination of the Urine for Tubercle Bacilli. Am. J. M. Sc., 1914, cxlviii, 722. By Surg., Gynec. & Obst.

The author urges the importance of using every possible device to increase the chance of finding the tubercle bacillus when it is present. In one of his cases in which an ulcer existed in the vault of the bladder well away from the trigone, the bladder was distended with water to the point of discomfort. The washings were centrifuged and several clumps of tubercle bacilli were found; they doubtless had been washed off the surface. Repeated examination had been made in the usual way with negative findings.

This technique is especially recommended when an ulcer exists in the vault of the bladder at a point where it is seldom reached by the urine. Both ureters were catheterized, and the urine injected into guinea pigs with negative results. A diagnosis of primary bladder tuberculosis without demonstrable kidney lesion was made in this case.

In suspected miliary tuberculosis the urine should be examined for tubercle bacilli, for the value of urinary examination in these cases is far greater than that of sputum examination.

HENRY J. VAN DEN BERG.

Martin, W. F.: Value of Hydrotherapy in Urology. J. Am. M. Ass., 1915, lxiv, 101.

By Surg., Gynec. & Obst.

Martin calls attention to the various hydrotherapeutic measures and their indications and value in many urologic conditions. He discusses the physiologic effect of cold and heat and their mechanical and reflex effects, and enumerates the benefit derived in cases of acute urethritis by immersing the organ alternately in hot and cold water several times a day. The advantage is shown of a not too prolonged sitz bath in calculous colic, while in chronic conditions Martin advises following the warm with a cold sitz bath. The cold sitz bath is particularly recommended as a palliative treatment of prostatic hypertrophy with congestion, malignant growths with hæmorrhages, atonic dilated bladders, and sexual debility. For the use of this procedure the tolerance for cold must be gradually built up.

The various types of balneotherapy, their chief value in promoting skin elimination and generally raising the patient's resistance before operation are also discussed.

J. S. EISENSTAEDT.

### SURGERY OF THE EYE AND EAR

EYE

Jackson, E.: Operations on the Extra-Ocular Muscles. Ophth. Rec., 1914, xxiii, 541. By Surg., Gynec. & Obst.

Jackson says that a man can easily operate himself out of practice, and he brings out the neglected factors to success in ocular operations, such as the importance of the secondary abductors or adductors in lateral squint, the importance of preserving the dominance of the primary abductor or adductor near the center of the field of fixation, and, lastly, that vertical squint requires an operation changing the relative extent of the various functions performed by the same muscle.

The time used in tenotomy could be better spent learning the indications and contra-indications for such an operation, because luck and brilliant surgical technique does not save one from unsatisfactory results. Tenotomy especially had its rise and fall until Landolt and his school say that it

should not be done in any case.

The more important physiologic facts although considered in discussions have been neglected in bringing out certain anatomic conditions; hence great importance is attached to first accurately correcting ametropia and observing the result; e.g., the influence of paresis on one or more muscles, the distribution of the effect of the operation between opposing muscles, preliminary fixation of the squinting eye, and the measurement and development of the fusion sense.

Because it is usually assumed that each muscle has its particular function and has no connection with the other muscles the cooperation of the various muscles is emphasized. An operation on any one of the muscles if it alters the effect produced by the contraction of that muscle alters the general muscular balance. In each particular movement of the eye one muscle has a leading or primary function, and the other muscles a subsidiary or secondary function. The relation between these primary and secondary functions varies in wide limits but in the case of convergent squint it is of great importance.

The marked effect of the superior and inferior recti in both secondary abduction and adduction is The point most strongly brought out is that in adduction the effect of the secondary adductors is not felt until the limit of adduction is reached and then they become effective assistants, so that in convergent squint fully two-thirds of the force required to keep the eye turned in is exerted through the superior and inferior recti. In contrast to this, however, when the eye is turned out far enough, the superior and inferior recti will help it turn more, hence the internal rectus is without its ordinary secondary assistants to oppose this.

The reason why tenotomy of the internal in high convergent squint produced little effect is that the tendons really holding it—superior and inferior recti-were untouched; hence if the nasal portions of these were cut the desired effect was secured with no risk of recurrence or divergence. In the case of high divergent squint, advancement changes the direction of the eye so that the secondary adductors The real danger in tenotomy of the internal rectus lies mostly in transferring the predominant control from the primary adductors to the secondary. Hence the axiom that the primary adductor and abductor tend to equilibrium with the eye at the center of its field of movement; the secondary adductor and abductor tend to draw the eye away from this center.

The advantage of advancement is not in the increased strength of the muscle advanced, but in the preponderance given to its influence over the influence of the muscles that would assist it as their

secondary function.

In paralysis of the superior oblique, division of the superior rectus and transplanting it farther back and to the temporal side, thereby neutralizing the extorsion and tendency to turn down, is one of the several ways of correcting this condition.

In right hyperphoria of 2 to 3 degrees, especially after dissociation for 10 minutes, partial nasal tenotomy of the superior rectus will give great relief. It has much the same effect as the above.

Complete oculomotor paralysis is dealt with in the following manner: The superior oblique is attached at the insertion of the internal rectus, the external is split and one-half is attached to the upper and the remainder to the lower temporal portions of the eyeball. SYDNEY WALKER, JR.

Cockrell, B. A.: Corneal Ulcer; Its Complication and Sequelæ. Kentucky M. J., 1915, xiii, 58. By Surg., Gynec. & Obst.

The cornea, being the most exposed portion of the eyeball, is the most frequent seat of injury and infection of the whole globe, and because of its nonvascular formation it has a special adaptability for ulcers. An ulcer once started must be completely obliterated and all aseptic precautions applied to stop further infection.

The diagnosis as to the kind of an ulcer is made from the history of the case, the location of a foreign body, the condition of the other portions of the eye, by systemic conditions, by the character and formation of the ulcer, and by the aid of the micro-

scope.

Phlyctenular ulcers, being those caused by the various micro-organisms, are treated by scraping and curetting. All soft tissues should be removed and the adjacent tissues scraped toward the ulcer to empty the interlaminator spaces. A careful watch should be kept and the scraping repeated on the slightest evidence of further infection.

If the ulcer is tubercular or specific the treatment

of the primary condition naturally follows.

Fully 05 per cent of the corneal ulcers are due to the pneumococcus. Antipneumococcus serum will promptly cure the majority of such cases, but local treatment should be used in conjunction with all other treatments.

For small ulcers use nitric acid, either pure or diluted with pure water, half and half. Apply by dipping a wooden toothpick or match in the acid, hold in the air until the surface of the wood no longer glistens, then press it against the ulcer until

it whitens.

Iodine is especially adaptable to all ulcers of the indolent type. It lessens rather than increases For the latter it seems to possess a scar tissue. peculiar affinity and to exert a remarkable influence. The judicious use of iodine cannot be too warmly advocated. In the majority of cases one application is sufficient, but in some instances two and even three applications are necessary. Use the tincture of iodine in all cases.

Cocainize to complete anæsthesia, insert an eve speculum, scrape the ulcer with a spud or similar instrument, dry the ulcer thoroughly, and apply tincture of iodine on a few fibers of cotton around a probe, applicator, or toothpick. Be careful to

protect the healthy parts.

Another treatment is a watery solution of iodine, gr. 1 (0.065 gm.); sodium iodide, gr. 3 (0.2 gm.); and water, one ounce (30.0 gm.) Use three drops of this solution three or four times a day. It is not very painful and the congestion of the conjunctiva is only temporary. This may be used for several weeks in indolent cases.

The use of the actual cautery is equally as efficient as scraping, though more alarming to the patient. This may be done by a galvanocautery tip, steel knitting needle, or steel probe heated to a white

heat in an alcohol flame.

Dendritic ulcers — those of the nerve-endings are best treated by scraping, then applying silver nitrate or formaldehyde 1:60.

In all ulcers due to keratitis, dilatation of the

pupil by atropine is necessary to prevent posterior synechia and iris complications.

Caustics should be neutralized by weak acids or water and should be dipped in a boric acid solution.

The acids should be neutralized with soapsuds,

soda, or lime water.

Yellow oxide of mercury is an important adjunct in the treatment of all cases, as it insures asepsis and is very soothing. A plain diet, outdoor exercise, and plenty of fresh air should be insisted upon. General systemic treatment is very important.

The irritating propensities of cocaine should insure its very sparing use. It has no medicinal value in the eye and should never be used except as an anæsthetic.

Fellows, C. G.: New Methods in Dealing with Cataracts. Clinique, Chicago, 1915, xxxvi, 1. By Surg., Gynec. & Obst.

In dealing with immature cataracts there is the possibility of an early operation, without the old method of semidarkness for years. Fellows advocates preliminary capsulotomy on the morning of the day the extraction is to be done in the afternoon.

This method has been developed considerably since its accidental discovery by Homer E. Smith. The preliminary capsulotomy adds much to the success of the final operation; and the adoption of free lavage of the anterior chamber, so heartily praised by Colonel Elliot, is another addition to the technique to be recommended.

Fisher, W. A.: Loss of Vitreous in the Intracapsular Cataract Operation and Its Prevention. Arch. Ophth., 1915, xliv, 18.

By Surg., Gynec. & Obst.

Fisher favors the intracapsular operation in cataract extractions. Its sole disadvantage is loss of vitreous occasioned by pressure upon the eyeball by the lids and by the operator. The first of these he practically eliminates by the use of his retractor and double hook, and the latter is lessened by his new instrument, which is a modification of the Smith spoon; i.e., a needle at the other end. He shows how the use of the needle prevents loss of vitreous when in its removal the lens sticks in the corneal opening. The point of the needle is stuck into the lens and the lens lifted past the obstruction, whereas the Smith hook alone necessitates increased pressure and probable consequent rupture of the capsule or loss of vitreous. The author notes that Smith has not accepted his suggestion of the use of the needle. C. A. MAGHY.

Knapp, A.: Report of One Hundred Successive Extractions of Cataract in the Capsule After Subluxation with the Capsule Forceps. Arch. Ophth., 1915, xliv, 1. By Surg., Gynec. & Obst.

Knapp employs the Koster speculum and Kalt capsule forceps with holocaine anæsthesia and one drop of atropine solution. No assistant is necessary

unless complications arise.

A large corneal section with a conjunctival flap is first made. After an iridectomy the capsule forceps is introduced to a point below the center of the pupil, the branches are then allowed to separate broadly, and a distinct knuckle of capsule is grasped. The grasp should not be too tight, lest the capsule be torn, but sufficiently firm to exert traction on the periphery of the lens capsule. The closed branches of the forceps are gently moved from side to side, up and down, or rotated, and the capsule can be seen to follow in the various directions. When the disloca-

tion has succeeded, a part of the margin of the cataract in the capsule appears free in the pupillary The portion dislocated is usually low, generally slightly to one side or the other, with the upper attachment unruptured. The forceps is then released and withdrawn. Pressure with a Smith hook on the lower portion of the cornea in the antero-posterior axis is followed by a "tumbling" of lens through the incision. The pillars of the iris should be properly replaced. Occasionally they become wedged into the iris angle and cause trouble when the lens and capsule are large. The conjunctival flap is replaced and the speculum removed. Should the capsule rupture at the time of operation it can usually be removed with blunt capsule forceps, after the contents have been expelled. opacity of the cornea may follow, but it soon disap-The dressing consists of dry sterile gauze and atropine ointment in the conjunctival sac.

Knapp emphasizes the advantages of the intracapsular subluxation operation: a black pupil, minimum ciliary injection, no iritis, and no needling. He cites the following risks: 40 to 50 per cent failures, especially in cases with thin capsule and uneven bluish white subcapsular opacity. He recommends the operation in hypermature and sclerosed lenses, even though the latter be quite immature with considerable sight present, and prefers it to the Smith method in "disciform" variety. The following summary is given: mature 59; hypermature 26; immature 16.

Visual results: 20/15, 5; 20/20, 18; 20/20, 9; 20/30, 27; 20/40, 11; 20/50, 7; 20/70, 13; 20/100, 1; 20/200, 2; fingers, 4; projection faulty, 2; total loss, 1. Prolapse of vitreous: 16. The slightest loss to

be counted.

Visual results of this group of vitreous prolapse: 20/20, 1; 20/30, 7; 20/40, 2; 1 (traumatic cataract), 20/70; 4 (2 mac. cornea), 5/200; 1 (myopia), maculæ cornea.

Capsules ruptured during extraction, separately extracted, 6.

Iridocyclitis, 9; iritis, 6; cyclitis, 3; prolapse of iris, 6 (including incarceration).

Detachment of choroid (transient), 2; hæmorrhage in retina and vitreous, 4 (1 traumatic).

Retrochoroidal hæmorrhage, 1; uncomplicated, 76; complicated, 24; dystrophia corn. epith., 1; mac. cornea, 3; central chorioretinal changes, 6; optic atrophy, 1; glaucoma (previous), 3; detached retina, 1; hæmorrhage, 1; myopia (choroidal changes), 4; opacity vitreous (old), 4.

Of the 76, 68 obtained vision 20/15 to 20/40, 97 per cent; 2, vision of 20/50, 4V. 20/70; IV. 20/100; projection faulty, 1, iridocyclitis in diabetic subject with 8 per cent sugar, acetone, and diacetic acid).

C. A. Maghy.

# Eason, H. L.: A Case of Spontaneous Recovery from Detachment of the Retina. Lancet, Lond., 1915, clxxxviii, 14. By Surg., Gynec. & Obst. clxxxviii, 14.

Eason reports a case of spontaneous recovery from detachment of the retina with a duration of

fifteen days in an eve with high myopia. The transparent detachment involved considerably more than the lower half of the fundus, obscuring the disc and macular region. There were neither vitreous opacities nor signs of inflammation and vision was reduced to a bare perception of light. The patient was advised that at best the chances for recovery were extremely remote, in consequence of which she decided to go on with her usual occupation without the prolonged treatment usually outlined. Twenty-one days after the sudden loss of vision the retina was everywhere smoothly replaced and transparent, and the field of vision was complete. G. D. THEOBALD.

# Roe, A. L.: Collosol Argentum and Its Ophthalmic Uses. Brit. M. J., 1915, i, 104.

By Surg., Gynec. & Obst.

Roe considers collosol of undisputed value in gonorrhœal ophthalmia, hypopyon keratitis, parenchymatous keratitis, dacryocystitis, and ulcerative blepharitis. He has used this preparation many thousands of times and has never known it to cause the slightest irritation or staining of the conjunctiva. G. D. THEOBALD.

# Graef, C.: Prevention and Treatment of Suppurative Ophthalmia. N. Y. M. J., 1915, ci, 100.

By Surg., Gynec. & Obst.

Graef considers the subject of suppurative ophthalmia chiefly from the standpoint of gonorrhœal infection in the newborn. An important fact, however, to be borne in mind is that organisms other than the gonococcus are very frequently the cause of this disease, and if this were more widely recognized and remembered, hesitation or refusal to carry out the simple and safe ounce of prevention that Credé introduced would disappear as it should.

Statistics are given to show that 10 to 15 per cent of all cases of blindness — and among children fully one-fourth of all cases — are due to this preventable cause; surely a heavy indictment. Graef makes the astonishing statement that from reliable investigation there is no justifiable grounds for placing even one-half the blame upon midwives — that physicians are the more often at fault. To bear out this statement it is shown that the Massachusetts Charitable Eye and Ear Infirmary reported 116 cases of ophthalmia neonatorum, and that all but 2 of these cases were attended by physicians; again, "surely a heavy indictment." Avoiding injury to the cornea and guarding against overactive measures of treatment, hourly cleansing, the judicious use of iced compresses and 15 per cent protargol every three hours are advocated as more effective than the Kalt treatment. FRANCIS LANE.

# Clough, H. T.: Prevention of Blindness from the Standpoint of Trachoma, Gonorrhœa, and Syphilis. J. Maine M. Ass., 1915, v, 197. By Surg., Gynec. & Obst.

After briefly considering the preventive measures which should be religiously practiced by every

medical man, Clough broaches the sociological aspect of the subject and aptly asks: "What can the medical profession do to prevent the two great causes of blindness, syphilis and gonorrhœa?"

In the handling of this particular phase of the subject it is set forth that the physician takes but a minor part, because he cannot legally point to this or that case as one resulting from the social evil and then warn the public "to beware." Just as long as the sexual thermometer reaches the boiling point, warning, no matter how timely, will not prevent the contracting of venereal diseases, but teaching the public their consequences will result in earlier and more faithful treatment on the part of those infected, with the result that much can be done to lessen the ravages of the disease.

FRANCIS LANE.

# Stark, H. H.: The Effect of Syphilis in Injury of the Eye. Arch. Ophth., 1915, xliv, 49. By Surg., Gynec. & Obst.

The author treated a miner who had a small piece of rock removed from his right eye for syphilis with one-fourth grain injections of succinimide of mercury and atropine locally for ten days. He found papular syphilides midway between the root of the iris and the pupil with hypopyon — a finding contrary to Fuchs.

He operated upon a Mexican for left senile cataract. The patient contracted iridocyclitis on the twelfth day which did not respond to atropine. A positive Wassermann was obtained, following which salvarsan, potassium iodide, and mercury treatment was given. Eighteen months later the right lens was removed after a negative Wassermann with no complications.

From these and fifty other cases Stark concludes that complications following operations on the eye arise from syphilitic infection. C. A. MAGHY.

# Veasey, C. A.: Purulent Meningitis Following Penetration of an Eyeball by a Fishhook. Arch. Ophth., 1915, xliv, 10.

By Surg., Gynec. & Obst.

Veasey enucleated the left eye of an aged, highly nervous man fifty-seven hours after injury by a fishhook. Preliminary examination showed an open corneal wound with ragged edges, and the iris bathed with pus. There was marked loss of hearing in the right ear, preceded by severe headache and a highly nervous condition. The temperature was 104.6° per rectum. There was no nausea and no vom-iting. Examination of the enucleated eye showed a thin grayish line extending toward the optic nerve. Eighty hours after the accident, symptoms of purulent meningitis set in, and on the sixth day the patient died.

The author cites the history of thirty-four other cases, twenty-nine of which were fatal, meningeal symptoms having manifested themselves in most of these cases within forty-eight hours. The fatal cases terminated in from two to four days thereafter.

He concludes with C. Devereux Marshall, who recorded eight fatal cases in 6,580 enucleations, that infection had taken place before enucleation, and that meningitis may result from extension of the process by contiguity of the tissues or through the blood or lymph streams. He advises the use of strong antiseptics locally, following evacuation of the pus. C. A. MAGHY.

#### Gradle, H. S.: Concerning Removal of the Eyeball; Exenteration Versus Enucleation. Arch. Ophth., 1915, xliv, 29. By Surg., Gynec. & Obst.

The author gives a résumé of 153 cases of enucleation (67) and exenteration (86) performed during the past four years in the German University Eye Clinic in Prague. After discussing the advantages and disadvantages of each operation, he shows that enucleation is a preventive of sympathetic ophthalmia only when performed in time. He points out that if we accept Romer's theory that the culture medium flourishes only in the uvea, and there being a lack of continuity of the uveal tissue, sympathetic infection must be through the blood or lymph paths, then neither enucleation nor evisceration can prevent the development of the disease.

If, on the other hand, we accept the theory advanced by Elschnig in 1910, that sympathetic ophthalmia develops when the entire system is sensitized by the absorption of broken-down uvea in the form of antigens, which requires at least fourteen days, Gradle asserts that the source of the antigenic absorption — traumatic inflamed uvea - can be removed by careful evisceration as well as by enucleation. He maintains that it is still an open question as to whether enucleation of a panophthalmitic eye is liable to result in meningitis, for he holds that the infectious material is carried intraocularly before the operation takes place.

In conclusion, the author states that evisceration with no choroidal remnants adherent to the scleral capsule is possible except in cases of malignant growth and phthisis bulbi, while enucleation may be performed in all cases with the possible exception of very virulent panophthalmitis.

C. A. MAGHY.

#### EAR

# Oppenheimer, S.: Metastatic Complications of Suppurative Otitis Media. N. Y. M. J., 1915, By Surg., Gynec. & Obst.

The author lays stress upon the possibility of arthritic inflammatory processes being due to an ear infection, and cites five cases in which this relationship was established.

The nature of the complication is metastatic, due to a thrombophlebitis with bacteræmia. The joint trouble may be so severe as to mark the primary trouble in the ear, and thus the patient be exposed to great danger because of the fact that the sinus trouble would be undisturbed. Consequently the author advises that in all cases of arthritic inflammation, with an associated static lesion, it would be well to consider the latter as a likely primary causative factor.

The other locations mentioned as being foci for metastases originating from an infective thrombophlebitis are: the spleen, lungs, skin, eyes, kidney, and heart.

Otto M. Rott.

# Jones, E. L.: The Relation of the Rhinopharynx to the Middle Ear and Mastoid. J. Am. M. Ass., 1915, lxiv, 115. By Surg., Gynec. & Obst.

The author contends that every case of acute middle ear inflammation must spring from a pathologic rhinopharynx, however normal or symptomless it may seem or may have been previously; consequently the most effective measures must be directed toward treating the nose and removing the cause of the ear trouble.

In all cases, whether acute, subacute, or chronic, and regardless of the specific cause, the author forcibly swabs the rhinopharynx with a mixture of phenol, tincture of iodine, and glycerine, to which camphor and menthol have been added of sufficient strength to set up a violent reaction, with sore throat lasting from part of a day to several days.

The author's two formulas are:

I. Fifteen grains each of camphor and menthol rubbed to a liquid, I dram of compound tincture of iodine, 2 drams of alcohol, and sufficient glycerine to make I ounce. This is called the camphormenthol compound.

2. One part phenol, one part tincture of iodine saturated with potassium iodide, and two parts glycerine. This is known as the I. & A. C. Comp.—

the iodine and acid carbolic compound.

Method of application: Use a strong applicator to which is fixed a cotton mop. Dip first in the I. & A. C. Comp. and squeeze against the bottle neck to remove excess; then dip in the camphor-menthol compound and rub against the bottle neck only sufficiently to prevent dripping. Introduce into the nasopharynx and rub forcibly.

In the painful stage of acute inflammation or in the acute catarrhal stage without pain, the nostrils are first sprayed or swabbed with 2 to 4 per cent cocaine and 1:1000 adrenalin. The ap-

plication is made only once in 24 hours.

Отто М. Котт.

# Bledsoe, R. W.: Treatment of the Middle Ear Through the Eustachian Tube. Kentucky M. J., 1915, xiii, 16. By Surg., Gynec. & Obst.

In the treatment of the middle ear through the eustachian tube, it is essential to study the nose and throat in order to eliminate any predisposing factors before they have caused extensive or permanent damage. Any abnormality or condition, acute or chronic, which alters or interferes with the physiological functions of the nose and throat, may be regarded as a predisposing factor which may later be followed by tubal or tympanic trouble, or both.

The author prefers catheterization as the most satisfactory and scientific method of inflating the eustachian tube, employing a pure soft silver catheter passed with great gentleness and dexterity and regulating the quantity and force of air passed through the catheter by use of the auscultation tube.

He uses this method of treatment in cases of moderate or acute pain in the ear of a few hours' duration where the drum is slightly injected and retracted; in tubal and middle ear inflammation of mild degree and in inflammations of a severe grade he uses catheterization under strict asepsis in conjunction with paracentesis. Ellen J. Patterson.

## Alexander, G. J.: Nasal Obstructions as the Cause of Disease of the Middle Ear. J. Ophth., Otol. & Laryngol., 1915, xxi, 36. By Surg., Gynec. & Obst.

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The author mentions four types of such cases:

1. Those coming primarily for treatment of ear conditions who have concomitant nasal obstruction, which may be the predisposing factor in the etiology of the ear condition.

2. Those coming for treatment of a nasal obstruction, who, at the same time, have or have had

an affection of the ear.

3. Those coming for treatment of both conditions.
4. In those cases with an ear condition that continues in spite of conservative treatment, a nasal obstruction as the exciting cause may be found.

The following forms of nasal obstruction are mentioned in the order of their importance, and the methods by which they involve the middle ear are discussed: (1) adenoids, (2) deflected septum, (3) ridges and spurs, (4) thickening of the septum, (5) hypertrophic and hyperplastic rhinitis, (6) polypi, (7) foreign bodies, (8) packings in nose, and (9) neoplasms.

The diseases of the middle ear resulting from the above are: (1) acute otitis media, (2) acute suppurative otitis media, (3) chronic suppurative otitis media, and (4) a chronic adhesive process.

Отто М. Котт.

# Stimson, G. W.: Breakage and Removal of Eustachian Applicator. J. Am. M. Ass., 1915, lxiv, 430. By Surg., Gynec. & Obst.

The part of the Yankauer applicator that was broken off consisted of the cotton tip and an inch of the twisted wire applicator. The method of removal consisted in passing another dry cotton-tipped applicator and twirling it around, which procedure caused the dry cotton to engage the broken end of the wire and it was thus easily removed.

Otto M. Rott.

## Palen, G. J.: Bezold's Mastoiditis; a Third Series of Cases. J. Ophth., Otol. & Laryngol., 1915, xxi, 45. By Surg., Gynec. & Obst.

The author reports 11 cases: 2 cases had a distinct history of chronic otorrhea; 8 cases followed

acute middle ear conditions, and one case presented a very doubtful middle ear history, the mastoiditis seeming to be almost primary.

In seven cases there was discovered a fistula through the inner surface of the tip leading into the

digastric fossa.

In three cases the fistula was through the outer portion of the tip, but beneath the tendinous attachment of the sternomastoid or splenius capitis muscles. In one case no fistula could be found.

The brawny swelling in the neck occurred anterior to the tip in four cases; in four cases it appeared posterior to the tip; in two cases directly below the tip, and in one case the swelling extended anteriorly

and posteriorly.

Necrotic defects of the inner plate, over the lateral sinus with exposure of the sinus, were found in seven cases. In four cases the canal lumen was narrowed through swelling of its outer posterior portion. In two cases the drum was intact. Отто М. Котт.

Fowler, E. P.: The Origin of Labyrinthine Rest-Tone. J. Am. M. Ass., 1915, lxiv, 118.

By Surg., Gynec. & Obst.

The author's deductions concerning the origin of labyrinthine rest-tone are as follows:

I. Physiologic endolymph movements excite impulses from the end-organs, which are interpreted as sensation complexes from all the ampullæ. If the impulses from the two labyrinths approximately balance, or through practice are balanced by the aid of the coördinating apparatus, no sensation of movement is experienced. Binaural galvanic or caloric reactions with the head anywhere in the anteroposterior vertical plane demonstrate this clearly, as does the rotation of bilaterally nonfunctionating labyrinths.

2. The body normally receives a sensationcomplex (and a tonus) in the anteroposterior vertical plane approximately equal from its two sides, but in all other positions various complexes (toni) must be forthcoming, depending mainly on the position of the head. Any other assumption would not account for balance phenomena observed in the

various positions of the body.

3. Labyrinth tonus originates from all the labyrinth end-organs. Post-destruction phenomena also prove this to be true.

4. Endolymph stress is amply capable of maintaining static control in rest, as it does so in action.

5. Positive endolymph stress, within the canals at rest, can occur only because of connection currents ever present therein.

The author explains the occurrence of connection currents in health in one of two ways:

1. By a difference in temperature between the inner and outer labryinth walls. This may be stimulated by binaural caloric irrigations. Under this influence the moment the head is moved from the anteroposterior vertical plane, there arise marked unbalance phenomena, due to the placing of the canals in one side of the head more nearly in the optimum and those within the other side of the head more nearly in the pessimum position for caloric reactions. This theory of thermic differences is therefore improbable in health.

2. By a constant but variable difference between the temperatures within the ampullæ and the non-ampullated portions of the canals.

The author then mentions several facts which lend support to his theory of labyrinth tonus.

Отто М. Котт.

Fraser, J. S.: Two Cases of Otitic Extradural Abscess. Edinb. M. J., 1915, xiv, 38. By Surg., Gynec. & Obst.

The author reports two cases of otitic extradural abscess in the posterior fossa. In the first case the symptoms closely resembled those of septic thrombosis of the sigmoid sinus, and operation revealed an extradural perisinous abscess. Healthy red granulations were, however, seen on the anterior wall of the sinus, and in view of the soft condition of the sinus and the healthy appearance of the granulations on its anterior wall, and in spite of the occurrence of one rigor, the author did not open the sinus or ligate the jugular, but waited to see if rigors recurred or if the temperature rose to over 100° F. on two successive nights. The course of events justified the non-interference with the sinus.

In the second case the symptoms resembled those of basal leptomeningitis; viz., headache, stiffness of neck, Kernig's and Babinski's signs, increased tension of cerebrospinal fluid with turbidity on the occasion of the first lumbar puncture. There was, however, an absence of the restlessness so characteristic of purulent otitic meningitis; the patient was in fact rather drowsy, and the headache was not so severe as to cause the child to cry out. Some of the more severe symptoms of purulent meningitis were also absent, such as photophobia, pain on pressure on the eyeballs, and paresis of the ocular muscles. The symptoms pointing to a lesion of the posterior fossa were: spontaneous nystagmus, spontaneous pointing error, slight Rombergism and deviation on walking with the eves shut. Отто М. Котт.

# SURGERY OF THE NOSE, THROAT, AND MOUTH

#### NOSE

Hays, H.: The Surgery of the Posterior Tip of the Inferior Turbinate; the Relation of the Posterior Tip to Catarrhal Deafness and Tinnitus. Am. J. Surg., 1915, xxix, 20.

By Surg., Gynec. & Obst.

Hays states that the importance of the posterior tip of the inferior turbinate in the causation of deafness is not often appreciated. He describes

the following operation:

The turbinate is first well cocainized and then the posterior tip is infiltrated with about 30 mm. of one-quarter of one per cent cocaine solution with equal parts of adrenalin. This balloons the tip sufficiently to make it easy to operate upon. An angular pair of scissors is introduced, closed, beneath the turbinate. By rotating the blades upward and inward the turbinate is fractured at right angles. An incision is now made in the turbinate at the posterior third, deep enough to introduce the tip of a wire snare. The wire is passed over the enlarged tip and the shank of the snare pressed firmly into the incision. By closing the wire the posterior tip is firmly grasped and snared off. A small strip of bismuth subnitrate gauze is then placed against the cut surface.

The author has noticed considerable improvement in cases of deafness after the posterior tip

was removed in this way.

Freer, O. T.: The Inferior Turbinate; Its Flap Resection to Reduce It When Obstructive. J. Mich. St. M. Soc., 1915, xiv, 7.

By Surg., Gynec. & Obst.

The operation is done under cocaine anæsthesia with the patient in a semirecumbent position. The light employed is the Kirstein headlamp. An assistant standing behind the patient's head holds the nostrils open with two of the Freer's improved shortened nasal retractors. The operator usually needs a third retractor held in his left hand to pull open the nostril downward in order to permit him to see better along the nasal floor. With the knife a horizontal incision is made to the bone from the hindmost end of the turbinate forward along its lower border to its very front, terminating there in an upward sweep by a vertical cut which lies across the foremost part of the turbinate.

From the horizontal part of the incision the knife is used to elevate upward as much of the fap as possible. The operator then continues its elevation from in from the vertical part of the incision by means of the raspatory, the sharp elevators or knives from the author's septum set. When the entire flap is loosened it may be pushed upward

out of the way into the middle meatus. Now the chisel, with its bevel looking toward the nasal floor, is applied to the foremost attachment of the lower turbinated bone and made to follow the line of merging of the lower vertical part of the turbinate with its upper horizontal part. The loosened piece of bone is grasped with forceps, and any adhering shreds of membrane are cut by the sharp elevator. The flap is smoothed down, and if the posterior end is hypertrophied, it is cut away by the knife.

The nose is packed with layer packing of lint impregnated with dry subnitrate of bismuth powder. After three or four days the strips become movable and loose of their own accord, when they are extracted. The external nostril should, however, be kept closed to the air current for about ten days by a small wad of cotton. When the patient is permitted to use his nostril, he should be instructed to anoint it with an ointment of lanolin and oil of vaseline, equal parts, with boracic acid forty grains to the ounce, for a period of two to three weeks.

Отто М. Котт.

Hanger, F. M.: An Intranasal Operation with a Guide for the Cure of Dacryocystitis. Laryngo-scope, 1915, xxv, 23. By Surg., Gynec. & Obst.

The author recommends his operation for the cure of dacryocystitis only in those cases where probing the nasal duct with Theobald's probe No.

12 or 13 has failed to obtain results.

After thorough cocainization of the nasal duct a Theobald's No. 13 probe is introduced and left in situ as a guide during operation. After cocainization of the inferior turbinal and nasal wall, the inferior turbinal is severed with Struycken's nasal forceps and about one-third of the bone cut away, when the lower end of the probe is seen in the lower meatus. Withdrawing the probe slowly the opening is rapidly enlarged with a gouge, chisel, or punch forceps until the nasal wall is removed above the stricture.

It is best to pack the nose with a strip of gauze for twenty-four hours and irrigate the lachrymal sac for a few days.

ELLEN J. PATTERSON.

Glogau, O.: A Case of Dacryocystorhinostomy. Laryngoscope, 1915, xxv, 28.

By Surg., Gynec. & Obst.

The author describes his modification of Halle's operation for dacryocystitis, which is performed in a few minutes and saves the patient from the annoying probing during after-treatment.

The technique is as follows: After cocainization of the nasal wall, the sac is washed out through the

slit canaliculus, cocainized, and a lachrymal probe introduced. At the anterior attachment of the middle turbinal the bone together with its lining of mucous membrane is chiseled away until a hole 3 mm. in diameter is formed and the chisel strikes the probe. A thin blunt-pointed probe with an eyelet at one end through which No. 2 white silk is threaded is introduced and drawn through, leaving the silk The ends of the silk are tied at the canaliculus, no external dressing being used. Medicament is applied by means of the silk, which remains in place several weeks. ELLEN J. PATTERSON.

Kahn, H., and Gordon, L. E.: The Use of Pituitary Extract as a Coagulant in the Surgery of the Nose and Throat. J. Am. M. Ass., 1915, lxiv, 301. By Surg., Gynec. & Obst

Pituitary extract (Parke, Davis & Co.) administered hypodermatically in the dose of 12 minims to children and 15 minims to adults, not less than fifteen minutes before the intended anæsthetic, materially reduces the coagulation time of the blood and reduces the hæmorrhage following operations upon the nose and throat. These observations were made upon children and the effect upon the blood-ELLEN J. PATTERSON. pressure was variable.

Hill, G. W.: Skiagram of Frontal Region Showing Symmetrical Fronto-Ethmoidal Cells Extending Above Roof of Orbit. Proc. Roy. Soc. Med., 1914, viii, Laryngol. Sect., 2.

By Surg., Gynec. & Obst.

In reference to this skiagram, showing accessory fronto-ethmoidal cells extending far outwards between the frontal sinus floor and roof of the orbit, it had been assumed hitherto that the occasional presence of these cells, first described by Sir St. Clair Thomson under the name "orbito-ethmoidal," could only be ascertained by the Killian technique, and this assumption had been used as an argument for the inadequacy of the Ogston type of operation. The cells, however, could be seen by radiography quite clearly and could at least be drained by Good's type of operation. Отто М. Котт.

Hill, G. W.: Skiagrams of Frontal Sinuses Operated on by Good's Method. Proc. Roy. Soc. Med., 1914, viii, Laryngol. Sect., 2.

By Surg., Gynec. & Obst.

Hill recently performed Good's type of prenasal operation for enlarging the frontal ostium on five frontal sinuses, using Good's special bone rasps. He admitted that the technique appeared to be both easy and safe, but thought it too early to speak of the permanent results; the immediate relief, however, was surprising. OTTO M. ROTT.

Haseltine, B.: Obscure Sinus Disease in Relation to General Health. J. Ophth., Otol. & Laryngol., By Surg., Gynec. & Obst. 1915, xxi, 13.

By using the term "obscure sinus infections," the author desires to exclude those acute infections easily recognized and to emphasize the fact that the low-grade, chronic, often unrecognized, sinus disease is the one most insidious in its effect upon general bodily health. Such a patient may have no marked symptoms calling attention to the nose or sinuses, perhaps with no history other than what he calls "slight catarrh," and possibly even with no objective symptoms discovered by the usual cursory rhinological examination.

The following general conditions are mentioned and discussed as being caused by this obscure in-

fection:

1. Chronic anæmia or chronic toxæmia.

2. Hyper- and hypothyroidism.

- 3. Chronic rheumatism or recurring rheumatoid arthritis.
  - 4. Otosclerosis.

5. Bronchial asthma.

The following local diagnostic measures are mentioned for recognizing these obscure conditions of the sinuses:

1. Thorough rhinological inspection, or repeated inspections at various times including shrinking of intranasal ussues, postural tests, use of the nasopharyngoscope, etc.

2. Argyrol tamponade by the method of Dowling

repeated if necessary.

3. Transillumination and röntgenography.

4. Bacteriological study including cultures from the nasal and sinus secretions. Отто М. Котт.

Brose, L. D.: Nose, Throat, Ear, Orbital, and Intracranial Complications in Accessory Sinus Diseases. Laryngoscope, 1915, xxv, 35. By Surg., Gynec. & Obst.

Complications in accessory sinus diseases may be intranasal, as obstructed nasal breathing; of the throat, as pharyngitis, adenoid or tonsillar hyperplasia, laryngitis, tracheobronchitis, or spasmodic asthma; orbital by continuity of structure or in a mechanical way by pressure on the optic nerve; intracranial, as meningitis or brain abscess; and in the ear, secondary to pharyngitis.

ELLEN J. PATTERSON.

McKenzie, D.: Brain Abscess Secondary to Frontal Sinus Suppuration; Drainage; Recovery. Proc. Roy. Soc. Med., 1914, viii, Laryngol. Sect., 10.

By Surg., Gynec. & Obst.

The patient, a young man, aged 27, was taken to the hospital with a fistula in the right eyebrow leading into the frontal sinus of that side.

The history was as follows: Six weeks before, the patient, who had for some time been troubled with a purulent discharge from the nose, suddenly developed an abscess in the right upper orbital region with high fever and some delirium. After the abscess had been opened and freely drained, these constitutional symptoms rapidly disappeared and the patient recovered sufficiently to go to business, and to lead an altogether normal life. As the fistula did not close, however, he was taken to the hospital.

An X-ray examination having been made according to routine, the patient was admitted for operation. The X-ray plate showed a "normal," that is, an air-filled, sinus. Under general anæsthesia the author inserted a probe into the frontal sinus through the fistulous opening and was surprised to find that it passed an unusually long way into the cavity of the skull, so that it seemed as if it were an enormous frontal sinus. But on opening up the sinus it was found to be quite small, with a second fistulous opening in its posterior wall leading to a large abscess, seemingly within the frontal lobe. About 6 drams of fetid pus were evacuated. The fistula having been slightly enlarged, a drainage tube was placed in the abscess cavity with its outer end projecting from the supra-orbital wound. The débris removed from the abscess contained cerebral cortical tissue.

The patient improved very nicely. No untoward symptoms made their appearance and a month later the brain abscess cavity was apparently obliterated and the tube lying amid granulations. It was therefore removed, and after another tube had been inserted through the infundibulum and out at the anterior nares, so as to drain the sinus, the forehead wound was entirely sutured.

The only symptom which might have been due to the brain abscess was a rather slow pulse-rate, about 60. There was no appreciable interference with the intellectual powers; no changes in the optic disc; no emotional disturbances; and no paretic or paralytic phenomena.

Otto M. Rott.

Halle: Intranasal Operations in Suppurative Diseases of the Accessory Sinuses of the Nose (Die intranasalen Operationen bei eitrigen Erkränkungen der Nebenhöhlen der Nase). Arch. f. Laryngol. u. Rhinol., 1914, xxix, 73.

By Surg., Gynec. & Obst.

Halle points out the advantages of intranasal over external operations and describes the latest modification of his intranasal operation. Forty-two illustrations of the procedure show the different

steps.

The incision begins as high up as possible on the nasal wall and is carried down below the anterior end of the middle turbinate. A flap of periosteum and mucous membrane is separated from the bone. This gives a clear view of the field of operation. The middle turbinate is separated from the ascending ramus of the superior maxillary and pushed aside. It is removed only if diseased. The agger nasi and a part of the ascending ramus are removed and a Ritter's bougie introduced into the sinus cavity. This gives a better view of the ethmoid labyrinth than an external incision. A pearshaped burr is introduced in place of the bougie for the removal of the floor of the frontal sinus. A pliable curette is introduced through the opening and the sinus curetted out. The middle turbinate is replaced and a flap of periosteum and mucous membrane covers the wound.

Seventy-six cases have been operated on by the method with no deaths due to the operation. There was one death from meningitis which had already begun to develop when the patient was admitted. This intranasal method is to be preferred to external operation, except in extreme cases.

A. Goss.

Tilley, H.: Aspergillosis of the Maxillary Antrum.

Proc. Roy. Soc. Med., 1914, viii, Laryngol. Sect., 10.

By Surg., Gynec. & Obst.

The symptoms of this condition are: persistent discharge of mucus or mucopus; fits of violent sneezing with the occasional expulsion of grayish-white viscous masses; headache, with neuralgic

pains in and around the cheek and eye.

The nasal mucosa is generally pale and ædematous, and strong solutions of cocaine have little effect in reducing this condition. Transillumination revealed marked opacity of the antrum, and it was impossible to obtain a return of the fluid when irrigation was attempted through an exploring trochar.

On removal of the bone one is at once struck by the bluish-gray glistening surface of the antral contents and the absence of bleeding. The material is easily separated from the walls of the sinus; its consistence and appearance are remarkably like the contents of a muscatel raisin with the stones or pips removed; so viscous is it that it is easier to scrub than to wipe it from a curette or spoon. The Caldwell-Spicer-Luc operation is used.

The following is a summary of the histological

report made by Prof. S. G. Shattock:

Closely as some of the microscopic appearances simulate an alveolar type of tumor, of which the stroma has undergone mucinoid degeneration, it seems more correct to regard the formation as a pseudoplasm somewhat akin to the pseudomyxoma of the abdomen, which results from the effusion of mucin from a distended appendix, or of the mucinoid contents of an ovarian cyst into the peritoneal cavity. The formation is best viewed as consisting of mucin secreted by the mucosa under irritation, and subsequently inspissated, the fissures or less resisting lines of which have been invaded with polymorphonuclear leucocytes, as in the first stage of the organization of a blood-clot. It contains no fiber and no capillaries.

In regard to its pathogenesis, the disease may provisionally be attributed to the growth of the mycelium. On this assumption the disease would be a mycosis of the mucosal surface. A comparison of the mycelium with that of actinomyces, blastomyces albicans, and of aspergillus brings out its morphological likeness to the last-named; while the rarity with which sporothrix produces mycelium in the living body, and the fact that when this does occur the mycelium is accompanied by the presence of ovoidal yeastlike "spore-bodies," would exclude a sporotrichosis. Such a view of its mycotic pathogenesis harmonizes with the observation that in

certain of the cases the disease has in its course affected not only the antrum but parts of the nasal cavity.

Otto M. Rott.

#### THROAT

Harrison, W. G.: Tonsillectomy During Acute Endocarditis. South. M. J., 1915, viii, 59. By Surg., Gynec. & Obst.

After reviewing some of the literature on the sequelæ of acute tonsillitis, Harrison reports six cases in which tonsillectomy was performed during an attack of acute endocarditis, the operation thus performed being of distinct value in relieving the cardiac trouble.

The following conclusions are appended:

r. Rheumatism or acute rheumatic fever, with its frequent complications of endocarditis, pericarditis, chorea, etc., is often the result of acute cryptal tonsillitis.

2. The milder attacks of tonsillitis with lower temperature and transient sore throat are more apt to be followed by arthritis than are the severe attacks of tonsillitis.

3. It is often wiser to perform tonsillectomy during an acute attack of endocarditis and remove the source of infection than delay with the hope of operating after the acute attack has subsided.

4. The tonsil crypts can sometimes be cleansed by local applications and by syringing with antiseptic solutions, but in spite of the most assiduous care it will sometimes be impossible to find every focus.

5. Cultures should be made from the tonsil in all cases of joint or heart involvement and properly preserved. From these cultures vaccines can be made and the patient properly treated with them in cases where the fever and other signs of infection do not disappear within a reasonable time after operation.

Otto M. Rott.

Vanderhoof, D. A.: Abscess Following Tonsillectomy Under Local Anæsthesia. Laryngo-scope, 1915, xxv, 20. By Surg., Gynec. & Obst.

The author reports the case of a healthy man, aged 23, upon whom he performed tonsillectomy under local anæsthesia, using 30 drops to each tonsil of approximately a 1:10,000 solution of adrenalin

and a 2 per cent solution of novocaine.

On the evening of the fifth day following operation the left jaw became sore, and ten days later a hard tense swelling with no area of fluctuation had developed under the left inferior maxilla, the left eye was swellen shut, the blood count showed a leucocytosis, and upon exploration externally pus was found deep over the region of the submaxillary gland.

Two days later pus discharged spontaneously into the throat from an opening in the lower part of the operative field on the left, though the tonsillar field had remained normal following operation. Three weeks after operation the patient had entirely

recovered. Ellen J. Patterson.

Elphick, G. J. F.: Hæmostatic Guillotine. Proc. Roy. Soc. Med., 1914, viii, Laryngol. Sect., 26.

By Surg., Gynec. & Obst.

The instrument was designed for the complete enucleation of tonsils, which are removed from their beds with their capsules without loss of blood.

The method used is approximately that of Sluder, but, in addition to the one cutting blade, there is a crushing blade, which enters between the anterior faucial pillar and the tonsil, and effectually crushes all vessels between the capsule of the tonsil and its bed. When the crushing blade has been pushed home, it remains locked in this position by the Hagedorn catch at the base of the handle of the instrument. A light pair of fixation forceps is then applied to the protruding tonsil, and the cutting blade, which enters between the crushing blade and the tonsil, is pushed home. The tonsil is lifted out on the fixation forceps. The crushing blade, being still applied to the vessels which have been cut through, may be left on for a few moments and then gradually released by pressing down the catch with the little finger. Отто М. Котт.

Thomson, St. C.: Intrinsic Epithelioma of the Larynx, Suitable for Laryngofissure. *Proc. Roy. Soc. Med.*, 1914, viii, *Laryngol. Sect.*, 23.

By Surg., Gynec. & Obst.

The patient, aged 69, complained of absolutely nothing except hoarseness, which had been coming on for six months. The whole of the left vocal cord was replaced by a red, knobby, ulcerating infiltration; the cords moved well; the rest of the larynx was quite normal; there were no enlarged glands. The Wassermann reaction was negative. There were no indications of tubercle. He was a non-smoker.

The case was shown to illustrate the difficulty of diagnosing certain cases of epithelioma of the vocal cord. The infiltration was not suitable for removing a portion for microscopic examination. It was proposed to treat the case by laryngofissure, for which it seemed eminently suited.

Отто М. Rотт.

Shambaugh, G. E., and Lewis, D. D.: Laryngeal Diverticula. Ann. Surg., Phila., 1915, lxi, 41.

By Surg., Gynec. & Obst.

Three types of laryngeal diverticula are found: viz., (1) the extralaryngeal; (2) the combined, in which an extra- and intralaryngeal sac communicating with each other are present; and (3) the intralaryngeal.

The following conclusions are given after a study

of the literature of these rare conditions:

1. The sudden formation of the diverticula and the early age at which symptoms often develop would indicate that they are probably congenital, and that they are analogous to the lateral air sacs found in howling monkeys.

2. The true diverticula are constant in their position, appearing either as the extralaryngeal,

intralaryngeal, or combined type. The extralaryngeal sac can be removed easily, as in most cases the pedicle is small and there is little or no intralaryngeal.

geal prolongation.

3. The intralaryngeal and combined types are best treated by excision. In cases in which the intralaryngeal sac cannot be enucleated after incision of the thyreohyoid membrane, the thyroid cartilage may be split longitudinally in front of the superior horn. By this method the enucleation of the internal sac can be made practically extralaryngeally.

Intralaryngeal methods consisting of splitting of the sac and partial removal of the wall are unsatisfactory, for the posterior extension of the sac is removed with difficulty, if at all. Air and pus collecting within this extension causes a recurrence of symptoms.

Otto M. Rott.

# Ingals, E. F.: Symptoms and Diagnosis of Laryngeal Tuberculosis. Laryngoscope, 1915, xxv, 13. By Surg., Gynec. & Obst.

For the detection of the earliest manifestations of tuberculosis the author thinks a careful analysis of the history should be made, including hereditary tendency, together with a careful examination of the objective signs of departure from health.

He considers the early symptoms of tuberculous laryngitis as those of an ordinary cold continuing for several weeks attended by a hacking cough with little or no expectoration, some weakness of voice, hoarseness, loss of weight and strength, some rapidity of pulse, and a slight afternoon elevation of temperature. Other early signs of tuberculosis are anæmia of the mucous membrane of the nasal cavities, especially of the palate, and a thinness or atrophy of the laryngeal walls, with later a pale dense swelling of the epiglottis and pyriform swelling of one or both aryepiglottic folds.

The later signs are dysphagia due to ulceration of the larynx, with the symptoms of pulmonary tuberculosis superadded to the local symptoms.

ELLEN J. PATTERSON.

#### MOUTH

Loeb, V.: Acute Parenchymatous Glossitis. J. Am. M. Ass., 1914, lxiii, 2020.

By Surg., Gynec. & Obst.

The author briefly reviews the subject, which he deems rather rare. The several types are known as (1) acute, parenchymatous, deep, phlegmonous, and interstitial.

It is noticed most frequently during the winter months and attacks males more frequently than females, occurring between the ages of 20 and 40.

The etiological factors are exposure to cold and dampness with a lowered resistance, although at times it does follow the infectious diseases, especially scarlet fever. No specific germ has been isolated, though streptococci and staphylococci have been found.

Predisposing causes are injuries, such as those from carious teeth, faulty dental work, tooth-picks, etc. Gerhard adds corrosive substances, hot liquids, and stings of insects.

The affection begins with pain, which comes on suddenly and increases in severity, affecting no

particular area.

The organ swells rapidly, filling the oral cavity, often protruding; the temperature rises; salivation ensues, and the patient is in danger of suffocation. Deglutition and respiration are difficult and the cervical lymphatics are palpable.

The differential diagnosis lies between it and the acute swelling due to salivary, calculous, and other

acute swellings in the floor of the mouth.

The pathology is that of an acute violent inflammation with intense injection of the lymph-vessels, chiefly in the musculature. The prognosis should be guarded on account of possible complications. Bennett gives a mortality of 3 per cent. Recovery may be by resolution, or suppuration may result, and gangrene may develop. The treatment should be immediate and surgical, deep longitudinal incisions being made along the dorsum on either side of the median line. If a deep abscess at the base of the tongue develops which cannot be reached through the tongue, it must be attacked from without. Gangrene should be treated by the cautery.

In all cases antiseptic mouth washes should be used freely, together with cold applications and

morphia to control pain.

The author reports a case showing a photograph of a protruding tongue, conical in shape. No pus was found after 10 aspirations, which by the profuse bleeding induced reduced the congestion.

Continuous cold applications to the tongue, with morphia, nasal and rectal feeding, within four days so reduced the size of the tongue that the patient could talk and even swallow with difficulty.

An acute nephritis was present, which also responded to proper treatment. H. A. Potts.

# Rosenow, E. C.: Mouth Infection as a Source of Systemic Disease. J. Am. M. Ass., 1914, lxiii, 2026. By Surg., Gynec. & Obst.

The author has found that the organisms in some of the more chronic infectious lesions are quite different from the organisms found in the focus of infection at the same time; this, however, does not minimize the importance of the focus of infection in any way, as the organisms in the tissues may have undergone a change, which fact would modify the action of an autogenous vaccine made from the focus, as it would not contain the proper antigens. Observation has led him to believe that it is in the focus of infection that the changes in virulence and the different affinities for various structures are acquired; in other words the focus of infection is to be looked upon, not only as the place of entrance of the bacteria, but also as the place where the organisms acquire the peculiar property necessary to infect.

While the mouth is probably the most common source of infection, one should look further. In connection with acute infections (rheumatism) the author cites a case in which repeated thorough examinations had been made but no focus found until it was located by isolating a streptococcus from the intestinal tract, which when injected into animals produced rheumatism. The patient was immunized for a long time by a vaccine made from that organism. Later he had trouble with his teeth, and his dentist found an alveolar abscess and pyorrheea. From this mouth which showed no signs of inflammation the author made cultures which produced rheumatism in an animal.

Another case in which the focus of infection was overlooked was that of a boy who had an acute attack of rheumatism with endo- and pericarditis, which developed ten days after the boy had suffered a crushing injury to his thumb. A culture from a necrotic area on the thumb revealed a streptococcus like that of rheumatism which produced rheumatism in an animal. To find the causative focus of infection not only the stomatologist but the general practitioner and surgeon should be consulted.

H. A. Potts.

# Mayo, C. H.: Mouth Infection as a Source of Systemic Disease. J. Am. M. Ass., 1914, lxiii, 2025. By Surg., Gynec. & Obst.

Since all animal life depends on some other form of cell life, vegetable or animal, it seems but the part of all life to carry on this process of germinative development and maturity. It is only the resistance of healthy cells that prevents the inroads of the myriads of ever-present bacteria and animal parasites which are striving to get a foothold that they may in turn carry on their life work. Disease, then, is an inflammatory process from infection and the efforts at repair. It may also be chronic from the failure of cell life through lack of defense, from defective nutrition and advancing age. The diseases of childhood are largely preventable.

Infections which produce the greatest number of diseases enter the system by way of the alimentary and respiratory tracts, and the great importance of the well-known diseases of the nasal passages with their sinuses, the lymphoid tissue of the pharynx, including the tonsils, and the diseases of the gums and teeth, are now more generally appreciated. Smithies has shown, contrary to the current belief, that the acid gastric juice destroys bacteria, that the gastric juice from 2,406 patients with "stomach contained bacteria in 87 per cent, and from a study of his findings it appears that the common forms of pus-producing organisms have their proliferation retarded in gastric juice, but that bacilli (often of the colon group) as well as leptothrix buccales thrive in the stomach.

Bacteræmia occurs in all infectious diseases, and according to their number and virulence the blood responds in slight or extreme degree to the symptoms, general and local, constituting the disease.

The author refers to the work of Rosenow not only in showing bacterial mutation, but in showing that the gastric mucosa is attacked from behind through the blood stream by bacteria which live in the blood and have a selective action for these particular areas causing ulceration.

Septic bile, which in the majority of cases is caused by infection carried to the liver through the portal circulation, is changed in that it fails to activate the pancreatic and duodenal secretion, thus making various phases of indigestion with qualitative rather than quantitative food trouble.

Acid-bathed or acid-secreting surfaces are very subject to cancerous change, while alkaline-bathed surfaces are much less liable to be involved.

The infected mouth shows a tendency to acid reaction and it is through this acid change that we have an additional danger in cell degeneration of a malignant type from irritation.

The author advises a more effective school inspection by competent men. H. A. Potts.

# Billings, F.: Mouth Infection as a Source of Systemic Disease. J. Am. M. Ass., 1914, lxiii, 2024. By Surg., Gynec. & Obst.

The author confines his remarks to "alveolar infection as related to systemic disease," advising the use of radiographic films, as by no other method can the exact condition of the alveoli and roots of teeth be determined. General systemic conditions may cause mouth infection and alveolar disease, but whether primary or secondary, alveolar infection may be the dominant factor in the production of malignant endocarditis (streptococcus viridans), chronic arthritis, and myositis. The streptococcus-pneumococcus group comprise the important pathogenic bacteria related to systemic disease, and such systemic disease, due to focal infection, is probably hæmatogenous, resulting in embolism of small and terminal arteries, causing ischæmic hæmorrhage and endo-arterial proliferation, resulting in interstitial overgrowth, cartilaginous, osseous, vegetative, and other morbid changes, dependent on the tissue infected.

The author cites the experiments of Axhausen, who ligated the blood supply to joints and produced conditions simulating arthritis deformans to explain the action of the bacterial emboli in causing the above-mentioned joint changes.

To manage and investigate these patients requires team-work by specialists.

quires team-work by specialists.

After the focus or foci have been removed by various means, including, if necessary, the use of autogenous vaccines, the patients must have their natural defences against systemic infection strengthened by rest, both mental and physical, good air, wholesome food, optimistic surroundings, restorative tonics, and other drugs.

Pain must be relieved and at first passive exercise followed by active graduated exercise in order to restore the circulation in the affected parts and to hasten the restoration.

H. A. Potts.

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# SURGICAL TECHNIOUE

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# INTERNATIONAL ABSTRACT OF SURGERY

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# COLLECTIVE REVIEW

# RÖNTGENOLOGY OF GASTRIC CANCER

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THE clinical value of the röntgen ray in the diagnosis of gastric cancer has now become widely recognized. It is nineteen years since Cannon (1)¹ of America first used bismuth subnitrate in food to study the living stomach of the cat, and it is seventeen years since Williams (2)¹ of Boston first used the same salt in sufficient quantity to delineate the human stomach. In this long formative period a large literature on the röntgen examination of the alimentary canal has arisen. A study of this literature makes it evident that röntgenologists feel the need of standardizing the technique and of codifying the interpretation of results.

In this article the usage and opinions of the foremost röntgenologists regarding the diagnosis of gastric cancer will be considered in the following order:

- I. Technique
  - 1. Contrast-meal
  - 2. Patient-preparation and position
  - 3. Screen and plate procedure
- II. Röntgenologic Signs of Gastric Cancer
  - I. Anatomical
    - (a) Flexibility of stomach walls
    - (b) Position and size
    - (c) Form
      - (1) Alterations due to wall growth
        - (a) Filling-defects

<sup>1</sup>Prof. Rieder of Germany is usually credited with the first practical use of bismuth subnitrate in quantities which allowed clinical examinations of the human stomach. This honor, however, belongs to Williams and Cannon of Boston, U.S.A., who in 1899, five years before Rieder's publication, mixed bismuth subnitrate in large quantity in bread and milk and conducted the stomach examination in human subjects by screen and plates in both upright and horizontal positions very much as we do today. (See The Röntgen Rays in Medicine and Surgery, by Williams. New York: The Macmillan Co., 1901, pp. 359 to 373.)

- (b) Stenosis
  - (1) At cardia
  - (2) In body—hour-glass (3) At pylorus
- (2) Alterations due to adhesions
- 2. Physiological
  - (a) Filling and unfolding
  - (b) Movements
    - (a) Peristalsis
    - (b) Antiperistalsis
- (c) Emptying time—residue
- 3. Röntgen-clinical
  - (a) Palpation during röntgen inspection
  - (b) Localization of tumor
  - (c) Localization of pain or soreness
  - (d) "Symptom-complex"
- III. Differentiation of signs due to cancer from those due to—
  - 1. Gastric ulcer
  - 2. Gastric syphilis
  - 3. Gastric tuberculosis
  - 4. Benign growths
  - 5. Adhesions from disease outside the stomach
  - 6. Pseudo filling-defects and stenoses due to-
    - (a) Material within stomach
    - (b) Pressure of extraventricular tumors, etc.
    - (c) Spasm
      - (1) Cardiospasm
        - (2) Incisura and spasmodic hour-glass
        - (3) Pylorospasm
- IV. Stage of cancer at which röntgen signs become observable
- V. Reliability of the röntgen-diagnosis of gastric cancer

It is to be regretted that so few of the prominent American röntgenologists have contributed to the literature of cancer. This, in part, is due to the comprehensive character of the contributions which have been made by a few men so situated that they are able to base their conclusions upon large numbers of cases in which the röntgen diagnoses have been "checked up" by operation or by autopsy.

### THE RÖNTGEN CONTRAST-MEAL

As is generally known, the stomach cavity is not visible by the röntgen ray unless it is distended with air so as to be less dense than the surrounding tissues or unless it is filled with a contrast mixture which is more dense than the surrounding tissues. The earliest method of the röntgen examination of the stomach was by air distention. This has been revived by Roepcke and Haenisch and shown to be the method of choice in certain cases. Haenisch (3) of Hamburg gives a striking description of this method:

The inflation of the stomach with air as an aid to röntgen diagnosis is by no means new; it is, on the contrary, the oldest method, and was introduced long before that of the bismuth meal, being used by Becker, Levy-Dorn, Dubois Raymond, and others in 1897. It never attained any great popularity, and soon fell into disuse, since previous to the introduction of instantaneous radiography it afforded but little additional information. Recently, however, Roepcke has obtained most admirable results by insufflation with air.

It will be well understood that this method of examination is contra-indicated when there is any danger of bleeding, and should only be used after careful clinical examina-

tion and with all possible precautions.

Under these conditions the instantaneous röntgenogram shows the contour of the stomach very clearly. The organ appears somewhat distended, and not noticeably larger than it does when tonically contracted around a bismuth meal.

I may here give a brief description of an instance in which the insufflation method gave an immediate and indisputable diagnosis. The case was one of suspected carcinoma. The bismuth examination showed an exceptionally broad sickle-shaped shadow, the caudal pole of which extended below the symphisis pubis. In order even partially to fill the stomach, I had to give several platefuls of the bismuth food. I therefore determined to make an examination of the air-distended stomach, which I did twenty-four hours later. The plate shows in the lower part of the stomach the remains of the sickle-shaped bismuth shadow. Half-way up the larger curvature is a constriction with a solid, club-shaped shadow in juxtaposition. Opposite this growth, on the lesser curvature, is a solid homogeneous shadow, with a white, mushroomshaped patch projecting into it. This was caused by the invagination of the stomach wall, and, being filled with air, showed clearly the presence of a deep crateriform ulcer.

This method offers the best opportunity for the stereoscopic examination of the stomachcavity, especially when preceded by half an ounce of bismuth subcarbonate in water, so as to obtain some precipitation of the bismuth upon the stomach wall, as is so frequently seen within the magenblase. It is, however, the contrast-meal which is the foundation of the röntgen-diagnostics of gastric cancer. Yet there is no recognized standard meal. On the contrary, a wide difference of opinion and usage is found in America as well as abroad.

The dense materials which have been most successfully used are bismuth subnitrate, subcarbonate and oxychloride, barium sulphate, zircon oxide, and thorium oxide. The subnitrate was the material used in the famous Reiderische Mahltzeit, but has been abandoned on account of the liberation in some cases of the nitrites in harmful quantities. The subcarbonate of bismuth is the most generally employed. The comparative densities according to Kaestle (4) are as follows: 75 gm. kontrastin, about 40 gm. thorium oxide, 50 gm. bismuth carbonate, and 100 gm. barium sulphate are equivalent. In Germany zircon oxide is sold under the name of kontrastin and is highly recommended by Kaestle.

Many writers (5, 6) have objected to bismuth subcarbonate because it is supposed to neutralize the gastric juice and thus alter the stomach chemistry and peristalsis. Barclay (7), before the Royal Society of Medicine, London, 1913, stated in a discussion on "Standardization of Bismuth Meals" that he was "quite sure as an absolute fact that bismuth carbonate did not neutralize gastric juice. After a carbonate meal you could get evolution of CO<sub>2</sub> by giving a dose of sodium bicarbonate."

As a matter of experiment it is readily found that when bismuth subcarbonate is mixed with hydrochloric acid solutions of the per cent met with in human stomachs, CO<sub>2</sub> is not given off nor acid neutralized for many hours. The same result is found with gastric juice obtained by the stomach tube. We may conclude that for the practical purposes of a röntgen test-meal bismuth subcarbonate is a stable salt.

The greatest difference of opinion is over a medium for the suspension of the contrast salt. Some of the bismuth mixtures are not suitable for the diagnosis of gastric cancer.

Kaestle (4) states: Stiff paps give unsatisfactory pictures of stomachs with narrow niches and canals. Sediments from ordinary watery contrast-meals show only the projections and deep parts of the inner surface of the stomach. The observation of a stomach-filling procedure under the employment of a drinkable, slowly sedimenting contrast mixture gives all desirable conclusions in the examination and makes the later administration of a stiff pap and sedimenting solution superfluous.

In England porridge (19), bread and milk (5), or water with sugar of milk (20) are most gen-

Rechou (8) gives the following erally used. formula, which maintains bismuth salts in perfect homogeneous emulsion for more than twenty-

Bismuth carbonate 120 gm., gum-arabic 20 gm., gum tragacanth 5 gm., syrup simple 150 ccm., water 350 ccm.

We may sum up the requirements of a röntgen

contrast-meal as follows:

r. It must be harmless.

2. It should be a homogeneous mixture so as to

possess a uniform opacity when mixed.

3. It should be of a fluid consistency to show any filling-defect, however small, so as to pass readily into channels or perforations, and so as to follow instantly any small peristaltic or antiperistalic wave.

4. It should hold bismuth salts in suspension long enough to permit observations in the upright

position.

- 5. It should be chemically neutral. Either an acid or an alkaline reaction may be factors of disturbance in different stomachs, impossible
- 6. It should not contain any soluble medicinal substance.
- 7. It should be miscible with ordinary stomach contents. Stomachs cannot be relied upon to be absolutely empty in the average cases. Therefore the contrast salt should not be held too firmly in a curd or jelly or in too permanent an emulsion. A partial precipitation of the bismuth or barium favors the accurate delineation of the gastric cavity, including the fundus.

8. It should not contain oil or fat, which often

inhibits peristalsis and delays emptying.

o. It should not excite disgust or nausea. This is disturbing to observation of cardiaspasm and gastric peristalsis.

10. It should be quickly preparable and in a form which may be kept always on hand without

decomposition.

Buttermilk which is so generally used fails to conform to these requirements in four particulars: it is acid in reaction; it contains fat; it holds the contrast salt in curds and in very firm suspension; it is disagreeable, even replusive, to many patients. Potato pap, gruels, acacia and tragacanth solutions may be made of any designated consistency and strained and may be flavored to suit the taste. The objection to them is that they must be prepared beforehand and may become stale. Also the röntgenologist is likely frequently to find himself without his vehicle on hand. Cocoa contains an alkaloid, dimethylzanthine, which is, however, feeble in action. Bread and

milk obviously lack the required homogeneity and are most unsuitable in the röntgen diagnosis of filling-defects. Water alone, or with sugar or flavoring, is very satisfactory and much used, but it allows of rapid settling of bismuth during

observations in the upright position.

Malted milk mixed with powdered starch, four to one, fulfils all the above requirements. It may be kept on hand mixed in the dry state so as to permit of rapid preparation whenever needed. A heaping tablespoonful of this mixture dissolved in one-half pint of boiling water will, after cooling, hold three ounces of bismuth subcarbonate or barium sulphate in the proper suspension for X-ray work. Much of the barium sulphate prepared for X-ray purposes is too coarse to remain in any practicable suspension.

#### PREPARATION OF THE PATIENT

For the X-ray examination of cancer cases the stomach should be empty if possible. cases where a clinical test-breakfast has been administered and the stomach contents have been removed by the tube for analysis, the röntgen examination should be delayed for half an hour to allow the patient to recover from the passing of the stomach-tube. The contrastmeal should not be given following any food, especially milk, which may curd and produce pseudofilling defects. Nervous, apprehensive patients need encouragement and assurance to permit of a satisfactory examination.

# POSITION OF THE PATIENT DURING EXAMINATION

The Holzknecht technique has dominated Xray Europe and to a large extent America. In his early work, now a classic, Holzknecht (9)

Further, we have learned the necessity of undertaking the examination not merely in one position of the body and in one direction of transillumination, but in both standing and horizontal positions and indeed in the dorsal, right and left positions, while the transillumination may be anteroposterior, lateral, or oblique.

# Barclay (10) says:

It was at once apparent that posture had an extraordinary effect on the gastric contents, and it became a matter of choice whether to examine the patient standing or lying down, as the limitations of time prevented a routine use of both positions. In many cases, however, both were employed, but the horizontal position practically never yielded any information that had not already been obtained, and its use was abandoned except for post-operative cases where the patient was too weak to stand and it was necessary to determine by what route the food left the stomach. For this purpose the horizontal position sufficed, but it is not capable of yielding reliable data as to the stomach walls, and for this reason I think

it futile to attempt ordinary X-ray diagnosis unless the patient can be examined in the upright position. Another point that determined the use of this posture was the fact that it is the usual position during digestion, and it is while this process is going on that the X-ray examination

The best view of the stomach is obtained with the abdomen against the screen, but in certain cases it was found that the pyloric portion seemed to turn somewhat backward and its shadow was thus foreshortened, but by rotating the patient slightly this portion came into full The pylorus itself is the most difficult portion to see clearly, not only on account of the small quantity of food that it usually contains, but also because of the superimposed shadow of the vertebral column.

Cole (11) does his serial work with the patient prone. He devised a table with a depression for the abdomen. This device to prevent deformity of outline due to pressure has been widely used in America.

When the patient lies upon his back the fundus and pars media may be well filled, observed, and palpated. But the antrum pylori, the pylorus, and the duodenal bulb cannot be studied in this position as a rule, excepting as they are filled by the palpating hand or spoon. This is the position, however, for comparison with the physical findings of the internist.

### SCREEN AND PLATE PROCEDURES

The screen should not be mentioned without a warning against the dangers to the operators of X-ray effects. The ordinary means of protection in general use secure perfect safety to the patient, but the introduction of new and more powerful apparatus necessitates redoubled precautions on the part of röntgenologists who work daily before the screen.

The open fluoroscope is the moving picture screen of clinical diagnosis. Each pulse of the current through the tube throws an image on the The succession of images is so rapid that the resulting picture has absolute freedom from flickering. It is an advantage in screen work to have the slowest rate of current interruption that gives a continuous image to the eye. This improves sharpness of outline in the moving image because it eliminates the slight phosphorescent lag which is present in most screens and which tends to give a slightly blurred com-The detection of delicate antiposite image. peristaltic stomach-waves in cases of pyloric growths is facilitated by slower rates of interruption. Also slower pulses reduce the quantity of X-rays passing through the patient and allow increased time for screen observation without exceeding the limits of safety.

Holzknecht (12), the great master of screen

technique, has lately recommended the use of a metal cylinder about 3 inches in diameter and 6 inches long. He says:

This tube is attached to the fluorescent screen and interposed between the patient and the screen. For radioscopic purposes we do not need a perfectly contrasted picture of the whole region. For a general view the ordinary radioscopic image is quite sufficient, so long as we can get a clear and well-defined picture of the limited region under suspicion, and for this purpose the Bucky diaphragm may be moved from place to place over the whole region under examination.

It is obvious that when the compressor is in use the increased distance between the object and the screen will cause some magnification of the radioscopic image. magnification, however, is rather an advantage than the reverse, since it is only used to determine minute details.

The complete effect of the new method is most striking. The veiled, indeterminate shadows, which had to be scrutinized with the greatest care, give place to black and white pictures, rich in details, which are clearly visible, and can be studied without difficulty in all their minutiæ.

While this device improves screen definition, the plate is still incontestably superior for detail. American röntgenologists regularly take a certain number of plates following or during the screen examination.

The cinematographic plate series, whether or not reduced to a "film," is the only rival of the screen. The superior detail of the plates can be studied with painstaking repetition which is impossible with screens and diaphragms. The expense of the cinematographic process and the delay in getting reports has retarded a recognition of its value. Also palpation and the localization of tumors or pressure-pains, which is a part of a screen examination, are impossible for serial plates.

Cole (13) has brought the serial plate method to perfection and has made the cinematographic film a practical means of diagnosis in his own office. He says:

The more extensive growths may be detected readily by röntgenoscopy (fluoroscopy) or by two or three röntgenograms. But the negative or positive diagnosis of small, indurated ulcers or early carcinomata necessitates a careful study of several series of röntgenograms made with the patient in both the prone and erect postures, and at various intervals after the ingestion of barium and but-termilk. The author is not content with less than 40 röntgenograms, and frequently makes 70 or 80, which are set up where they may be studied individually and collectively and superimposed for comparison. If expedient, they are reduced in size and reproduced cinematographically. The examination is necessarily an expensive one, but like surgery it may be placed within the means of all

Cole's brilliant work in the successful demonstration of small ulcers and early carcinoma has turned the serious attention of röntgenologists to the serial plate method. The time and expense of exposing, developing, and examining from 40 to 80 plates of a single case formed, with very few exceptions, an effectual bar to adoption of this method. Kaestle (14) made 16 exposures on one plate. But it remained for Pirie of Montreal to demonstrate Kaestle's procedure by means of a simple apparatus of his own design, so as to utilize the essential features of Cole's method and yet avoid the prohibitive features of time and expense.

Pirie's method consists in making from 6 to 16 separate exposures on a single plate. Thus it is possible to obtain a series, both cinematographic and stereoscopic, of 16 views and yet have but one plate to handle, develop and file. Two 4x17 plates would thus give 32 views. Pirie's (15) own description is as follows:

When the antrum pylori has been found and the contractions are seen clearly, one waits till the exact phase of contraction wanted is taking place. The plate is then at once slid into position and the 16 views are made one after another in about 32 seconds. In order to get the pictures fitted neatly on the large plate there are two metal runners at right angles to each other, with notches cut 3.5 inches apart on the one and 4.25 inches apart on the other. By making these notches engage, the plate is made to take up the exact position required for each view. The movement takes half a second and the exposure 1 to 1.5 seconds, the apparatus at my command not being able to do faster work even with an intensifying screen. The apparatus is operated from the interior of a protection cabinet.

This apparatus is a modification of that used by Cole for serial radiography. It has proved of great value to me for the diagnosis of duodenal ulcer, pyloric stenosis, early pyloric carcinoma, gall-stones, gastric and duodenal ad-

Potter (41) has devised a practicable and wonderfully compact instrument for making a series of exposures on a film with the patient standing. The device is described in his own words as follows:

This instrument, which I call a pylorograph, is designed to make a longer or shorter series of radiographs of a limited field of the stomach following a fluoroscopic examination. A film five inches wide is used, each exposure being five by five inches. The instrument, which is 20 by 9 by 5 inches in size, is arranged on a standard tube stand and held in front of the patient. The necessary shift of film and intensifing screen is made by hand by the operator standing at the side of the patient. One simple sliding member actuates the film advance and the screen withdrawal. The reciprocal motion places the screen again in contact. To obtain the particular field desired for this serial study, a fluoroscopic screen is mounted on the back of the instrument which allows one to "spot up" a given area beforehand. A serial time-switch operates the transformer current through a push button in the left hand of the operator, giving any desired duration and

Such an instrument as this brings serial röntgenography within the scope of daily practice.

In marked contrast to the Potter and Pirie procedures is that recommended by Lockwood. Practitioners are more likely to form their ideas from Lockwood's splendid work on "Diseases of the Stomach" than from röntgenological monographs. Lockwood's preface would lead one to believe that his views were also those of Learning. Lockwood (16) says:

Following the teachings of Holzknecht and Haudek, the author recommends the following as a routine technique in all stomach examinations: The patient is first prepared by a thorough catharsis, preferably by castor oil given at night. The following morning at a prearranged hour the patient takes a Rieder meal of 8 ounces of oatmeal gruel into which is thoroughly mixed 2 ounces of bismuth subcarbonate, or bismuth oxychloride, obtained from a reputable druggist, so that the drug is as pure as can be obtained. A light breakfast of tea and toast may be given one hour later. The patient is to be at the radiologist's office five and one-half hours after taking the Rieder meal, so that the first radiograph may be taken exactly six hours after the ingestion of the bismuth. This plate will show the motility of the stomach and the location of the head of the bismuth column in the ileum or colon. A second bismuth meal, composed of bismuth subcarbonate or oxychloride 1.5 ounces, gum acacia mucilage 2 ounces (33 per cent gum acacia), and water sufficient to make 8 ounces, is then given, and a second radiograph immediately made, which, in its turn, will show the size, shape, and position of the stomach. There are now in the two plates, as a rule, sufficient radiological data, combined with the history, clinical findings, and appearance of the patient, to make a diagnosis of the case. Occasionally a third radiograph may be taken fifteen minutes after the second as a control, or to see the motility of the pylorus and the first part of the duodenum. Sometimes in cases of hypermotility it is well to radiograph the patient three hours after the ingestion of bis-The patient is radiographed standing, although additional plates may be taken in the recumbent position

Barclay (17) represents an English view: He states:

Radiographs are of comparatively little use except for demonstration purposes, as they represent the picture at one particular moment only, and give little indication as to how the stomach receives the food, etc. Radiographs are therefore expensive, and in many cases unnecessary luxuries except for demonstration purposes, but a good radiogram of the pars pylorica will reveal more detail than can be made out on the screen.

Carman (18) describes the procedure at the Mayo clinic:

Having taken an ounce of castor oil the evening before, the patient reports in the morning without breakfast. He is then given an ordinary portion of wheat-meal porridge into which two ounces of barium sulphate have been well mixed, together with a little sugar and cream. He is directed to abstain from further food until after the examination and to return six hours later. On his return he is stripped down to the hips; the screen is placed against the abdomen and the presence or absence of residue in the stomach from the morning meal noted.

Next the "head" of the barium column, that is to say, the most advanced position in the intestine of the six-hour meal, is determined. Commonly this will be in the cæcum, but it may be anywhere from the stomach to the rectum, depending on the patency and motility of the tract.

The patient now drinks rapidly 6 or 8 ounces of water containing 1.5 to 2 ounces of subcarbonate well stirred. Its entrance into the stomach is carefully watched. When all has been drunk, the observer palpates toward the pylorus, and by this effleurage is often able to drive a quantity through into the duodenum, thus visualizing it. He then presses the bismuth in the stomach upward, watching the outline of the greater and lesser curvatures.

Sixteen ounces of potato-starch pap containing 2 ounces of bismuth subcarbonate and flavored with syrup of rasp-berry are then drunk by the patient. Usually this fills the stomach quite well, outlining it clearly. Irregularities which may have been previously observed with bismuth water are palpated to determine their nature and permanence. Mobility and peristalsis are also determined.

Two or three plates are now made, the patient standing with his abdomen against the plate-holder, with the upper

edge of the plate at or near the nipples.

It is evident that the signs of gastric cancer may be recognized by the screen alone or by plates alone. It is evident that serial plates will demonstrate an involvement of the stomach wall too slight to be found by the screen. There is no room for the controversy which has arisen over these two methods. One supplements the other. The skillful use of the screen removes the necessity of many plates. For the particular area which remains in doubt, Potter's or Pirie's method should be used. It is an advantage to take at least one large plate of the entire stomach and abdomen.

# II. RÖNTGENOLOGIC SIGNS OF GASTRIC

When the stomach is distended with air, it is possible in a limited way to study the stomach walls. But by the usual bismuth method it is not the stomach wall but the stomach cavity which is studied. When the ordinary contrast or opaque meal is taken into the empty stomach, the röntgenologist sees what is in effect a cast of the stomach interior. It is, however, a cast which permits the natural movements to be unimpeded and which conforms to every changing contour of this highly motile organ. But the röntgenologist cannot see this cast as one would see it if it could be removed intact from the body in a solid state. He sees only the outline, the silhouette, upon screen or plate. He may, however, see this from various points of view and at various intervals during stomach cycles and during different periods of stomach emptying. He may watch peristalsis. He may by palpation alter the form of this mobile cast and determine the flexibility of the enclosing stomach wall and its relation to pain areas, tumors, and adhesions. Upon such foundations rest the röntgenologic signs of gastric disease.

In cancer of the stomach these signs vary according to the location and extent of the involvement. It is obvious that carcinoma at the pylorus will give a different picture-complex from carcinoma of the pars media. Reference to the outline in the beginning of this paper will show the röntgenologic signs arranged in logical sequence.

# ALTERATIONS OF FLEXIBILITY, POSITION, AND SIZE

These are closely associated conditions. Reduction in the size of the stomach or flexibility of its walls as practical signs of carcinoma are not discussed in works on medical or surgical diag-These are cancer signs of real importance, which the röntgen method has made available. As the carcinomatous stomach contracts, it also ascends, so that in some cases it is entirely under the costal margins. The shrinking and ascent of the stomach are usually associated with lessened flexibility of the stomach wall and by lessened movability of the whole stomach on palpation. This type of malignant stomach is the scirrhous and is essentially a wall-infiltration. With this type of cancer the pylorus is open or gaping, even when the pars pylorica and pylorus are involved. The contrast-meal runs freely out of the stomach. If pyloric narrowing occurs after the stomach walls are already stiffened, dilatation may not result.

Schütz (20) in describing the scirrhous type quotes from Jonas as follows:

For the diagnosis of this form of carcinoma Jonas has given the following radiological indications: "The stomach scarcely projects from under the left costal arch. It may show the signs of stenosis of the pars pylorica and one may recognize a wall infiltration. If in an involvement of the pylorus the caudal pole of the stomach remains strikingly high in contrast to the expected dilatation, then this behavior awakens the suspicion of carcinomatous shrinkage, which may be proved by the radiological signs of wall infiltration."

Haudek is quoted by Schütz to the same effect:

The infiltrating carcinoma offers the sign of shrinking and diminution in the size of the stomach with indefinite limits of wall involvement.

Carman places "diminution in size" sixth in his list of carcinoma signs, which are arranged in the order of their importance. He says:

In the scirrhous type the indentations are very small, even absent, although the concentric narrowing may greatly lessen the caliber of the stomach, especially at the pyloric end, and give it a funnel or retort form, also diminishing its capacity.

Kaestle sums up the causes of stomach shrinkage as follows:

Diminution of the stomach comes with prolonged fast and in stenosis of the esophagus. One finds shrunken stomachs after gastro-enterostomy (without resection) in consequence of prolonged small load, and at last, as a malignant symptom, by diffuse infiltrated cancer of the stomach wall.

The part of the stomach attacked — for the most part the body and pyloric region-assumes finally the appearance of a hose with a sometimes humpy inner wall; the fundus is thereby often enlarged. The scirrhous stomach takes on the cow's-horn form, wrinkles up, and lies for the most part diagonally in the abdomen.

To Kaestle's list may be added prolonged alcoholism as a cause of contracted stomach

with thickened walls cited by Cole.

Diminution in the size of the stomach due to obstruction at the cardia and dilatation due to obstruction at the pylorus will be considered under the head of stensosis.

#### FILLING-DEFECTS

Irregularities in the form of the gastric silhouette due to wall-growth constitute the cardinal signs of medullary cancer of the stomach. Any growth which projects into the stomach cavity will indent the outline of the opaque stomach contents; also any ulcerated process which erodes the inner surface of the stomach or which forms scar tissue will cause protrusions from the silhouette or contractures of the outlines. is the meaning of the term "filling-defect."

It is evident from the foregoing section that scirrhosis rarely shows a filling-defect. Similar deformities in the gastric outlines resulting from causes other than growths or ulcerations of the stomach wall are considered as "pseudofillingdefects." These constitute the major problems

of differential röntgen diagnosis.

Overwhelming emphasis is laid upon the

filling-defect by most authors.

Barclay (17) says: "Apart from pyloric obstruction, the diagnosis of carcinoma depends upon the irregularities caused by the inroads of the growth."

Carman (21) says: "The filling-defect is a sign of cardinal import and practically indispensable in the röntgen-ray diagnosis of carcinoma."

Cole (13) says: "The röntgenological diagnosis of new-growths of the stomach based on permanent constant deformities in the gastric wall, which interfere with the systole and diastole of the stomach, and the progression pylorusward of the peristalsis.'

White and Leonard (22) say: "The most important evidence is a constant defect in the outline of the stomach on filling it with bismuth. very earliest cases this is due to a slight local thickening with disturbed peristalsis, and is hard

or impossible to recognize as cancer. In later cases the defect is irregular in outline and of any size, and looks like a jagged bite out of the stomach shadow."

A filling-defect produces symptoms according . to its location. At the cardiac orifice it usually produces some degree of stenosis with dilatation of the œsophagus and its attendant symptoms. At the pylorus it produces stenosis with signs of obstruction, or it produces stenosis with rigidity of the pylorus, so that the signs are not those of obstruction but of patency. In the pars media the filling-defect, on the greater curvature if sufficiently large, produces organic hour-glass. On the lesser curvature the filling-defect may simulate callous ulcer. On any portion of the stomach the filling-defect is likely to be associated with adhesions to adjacent viscera.

When an apparent filling-defect is discovered in a case, its constancy of occurrence and form are best determined by observations on several different days. The peristaltic wave will die out on reaching a filling-defect, to reappear beyond. If the filling-defect is located at the pylorus,

antiperistaltic waves may be seen.

Serial plates covering different phases of several different stomach cycles find here their greatest usefulness (Cole). The accurate repetition of delicate irregularities of forms in a cycle series may enable the röntgenologist to identify a true filling-defect that otherwise would have escaped detection or would have been too small for positive conclusions by other methods. (23) has repeatedly demonstrated the delicate precision of the serial method which is associated with his name. White and Leonard (22) report a brilliant example of this method in the hands of Ariel George:

A man of 60 years had mild attacks of epigastric distress and vomiting for several years. Physical examination was practically negative. Gastric secretion was normal. blood was found in the gastric contents or fæces. There was slight 12-hour gastric stasis. A diagnosis of cancer was made after X-ray examination on the basis of a very small annular defect at the pylorus, showing slight but definite irregularity, and resection urged. The surgical diagnosis at operation was chronic inflammatory tissue, but resection was done. The pathologist's report of gross examination was the same, but cancer was found on microscopical examination. We must give the radiologist the credit of making the correct diagnosis, and if such results are confirmed by a later series of cases they will prove of great value. We do not feel sure, however, that such X-ray evidence will always distinguish cancer from

Pseudofilling-defects due to material within the stomach, such as unmasticated food, milkcurds, and foreign bodies, need only to be mentioned. Some interesting cases of hair-ball in the stomach have been reported. Once seen skiographically the hair-ball is usually recognizable by the characteristic infiltrations of the bismuth mixture into the matted hair.

Carman (21) summarizes the subject of fillingdefects as follows:

True filling-defects must be carefully differentiated from indentations of the wall of the stomach by a gas-filled colon, by adjacent extrinsic tumors, notably those of the liver, spleen, colon and mesentery, and by spasm. The splenic flexure, in spite of preparation by purging, will often be distended with gas and give the adjacent greater curvature of the stomach a somewhat ragged aspect. By palpation during the screen examination the stomach can be pushed away from the colon, causing this raggedness to disappear, or at least show its character. Filling-defects caused by tumors external to the stomach, deforming its contour, are less easily differentiated. However, such filling-defects may change in appearance with slight palpation, or even with respiratory movement. During the screen examination the intimate relation of a palpable tumor mass to the stomach and its correspondence to a filling-defect in the gastric outline may be sometimes determined. The deformity produced by spasm, most often the hour-glass, is sharply delineated, in contrast with the usually indefinite shadings of a tumor-produced fillingdefect. Frequently it relaxes on energetic manipulation. Antispasmodics such as belladonna, given for two or three days prior to a second examination, will generally cause such a spasm to disappear.

The filling-defect is the hieroglyphic of cancer engraved upon the stomach wall.

## STENOSIS

Stenosis is a fundamental sign. It has already been touched upon under the head of filling-defect. It usually occurs, if time is allowed, in carcinoma of the cardia, or of the pylorus, and may be a late result of a filling-defect in the pars media, causing a malignant hour-glass stomach. Stenosis or narrowing of the pylorus may exist without signs of obstruction if the stiffened walls prevent pyloric closure. But a similar narrowing at the cardiac orifice always produces cesophageal dilatation unless the patient very early begins the use of a liquid diet. However, cancer at the cardia may run its entire course without obstruction or stenosis (Johnson, 24).

True organic stenosis of any part of the stomach may be caused not only by cancer but also by ulcer, tuberculosis, syphilis, and adhesions. Stenosis may be simulated by the pressure of

extraventricular growths or by spasm.

It is remarkable that stomach spasm as a reflex from affections outside of the stomach, such as a chronic irritation in the appendix or in the gall-bladder, is able to simulate so many of the phases of true stenosis. Thus we may have cardiospasm, pylorospasm, and spasmodic hour-

glass so persistent that their recognition taxes the utmost skill of the experienced röntgenologist. To locate the real disease-focus calls for a broad insight into the clinical data of the case and may be the means of excluding cancer when screen and plate show an apparent filling-defect of possible malignancy.

Stenosis at the cardiac orifice is best studied when the patient is in the upright position, with the body so rotated before the screen that the cesophagus shows clearly between the heart and the spine. This is approximated by placing the right nipple against the screen. The arms should be held forward as in the act of drinking, so as to clear the field for observation. The course of the contrast-meal during deglutition is then followed.

Signs of cardiac stenosis are: delay in the passage of the contrast-meal through the orifice and total obstruction. In cases of delayed passage, the orifice may show narrowing, increased length, winding course, stiffening of walls, and variable form. Narrowing with stiffened walls may prevent complete closure at any time, and a trickling of the contrast liquid into the stomach begins at once and continues until the contents of the esophagus have passed. In cases with diverticula, a portion of the contrast liquid is retained above the cardia in characteristic form. A constant deformity of the cardiac orifice has the force of a filling-defect. The coincident of a pain-area is confirmatory.

Cardiospasm is differentiated by showing the combination of total obstruction with sudden relaxation and sudden emptying of a full esophagus. The spasm, however, may persist for hours or days and again be unaccountably absent. Atropine or massage may relax the spasm. The esophagus may fill to the larnyx and yet show only moderate dilatation, or various

grades of dilatation may be present.

Cardiospasm is reflex and the disease focus is usually elsewhere, but irritation at the cardia may cause it, precisely as ulcer at the pylorus causes pylorospasm. However, the presence of cardiospasm may be relied upon to exclude malignant stenosis at the cardia in the majority of cases. In 1906 Plummer (25) reported 11 cases, and in 1908 40 cases (26), none of which proved to be malignant. In his last paper (26), however, he mentions 3 cases, not included in his series, in which cancer complicated cardiospasm. His statement is as follows:

The cause of the spasm is largely speculative. A few cases have been reported associated with gross lesions of the œsophagus, such as ulcers, fissures and small carcinoma in the cardia, carcinoma of the stomach, etc. We have

seen cases of carcinoma complicated by cardiospasm, and one case of hour-glass stomach due to syphilis with secondary cardiospasm. Œsophagitis and ulcer of the œsophageal wall not in close proximity to the cardia are to be looked on as secondary to cardiospasm and dilatation, not as primary factors. In the majority of cases, however, no such possible etiologic factors are to be found. Cardiospasm is not often present in inflammatory conditions of the œsophagus which come under observation. Evidence of œsophagitis previous to the onset of the cardiospasm could not be elicited from any of the cases. With three exceptions, none of the forty cases reported had neurasthenic symptoms.

The facility with which cardiospasm may be detected and studied by the X-rays promises to clear up its relations to gastric carcinoma.

Stenosis at the cardia, whether organic or spasmodic, should be looked for in cases of small stomachs. Similarly, in cases of a dilated stom-

ach look for stenosis at the pylorus.

To examine the pyloric region, rotate the patient either in the upright or horizontal posture so that the pyloric ring is either to the right or left of the spinal column. Usually stenosis may be at once excluded by seeing the contrast-meal pass at intervals through a widened pylorus. If the peristaltic movements are sluggish, the contrast-meal may be pushed through into the duodenal cap by palpation.

As in the case of cardiac stenosis, so pyloric stenosis is made evident by narrowing, lengthening, winding course, and constant deformity. The characteristic stenosis-peristalsis will be considered under the head of stomach movements.

Much more frequent than cardiospasm is pylorospasm. This sign is a strong hint to look beyond the stomach for the focus of disease. But if no extraventricular focus can be found, then it must be remembered that the reflex cause of the pylorospasm may lie within the stomach. It may be the first sign of a mucous membrane erosion anywhere in the stomach. Kaestle (4) is specific on this point:

A tonic spasm of the ring musculature of the stomach exit is "pylorospasm." This can be produced reflexly by the passage of abnormally acid chyme into the duodenum. Thus it can be a symptom of hyperacidity. This is, as is well known, frequently the cause or effect of an ulcer or erosion of the mucous membrane somewhere in the stomach. So reflex pylorospasm may occasionally be an indirect indication of gastric ulcer without localizing it. A mucous membrane erosion of the pylorus itself can produce a spasm in consequence of local irritation of the nerve elements of the region in question. In this way the pylorospasm becomes a direct expression of a stomach ulcer or ulcer carcinoma.

#### FILLING AND UNFOLDING

The filling and unfolding of the normal stomach as seen by the röntgenologist on the screen, while the patient in the standing position drinks

a contrast fluid, is illustrated and described with great care by Groedel. The first few swallows of contrast liquid are normally held up for a few seconds in the form of an inverted cone by a contraction of the pars media. A partial relaxation then converts the middle third or pars media into a narrow channel, allowing the contrast-meal to flow rather than drop into the antrum. This conversion of the pars media into a channel is the "canalization" phenomenon so frequently mentioned in röntgenological literature.

According to Groedel (10) the filling process is more or less distinctive in hypersecretion with hyperacidity, in achylia, in atonic dilatation, in mechanical dilatation, in stomach-wall changes, in adhesions, in hour-glass contraction, and in stomach tumors. The canalization is therefore a factor in the differential diagnosis of gastric cancer.

#### MOVEMENTS

The peristaltic movements of the stomach play an important part in the recognition of cancer, particularly in the early stages. The absence of peristalsis in an involved area of the stomach wall during the time when peristaltic waves are passing towards the pylorus is the essential point. A stomach-wall infiltration too small to give a filling-defect may be detected by this means. Scirrhous infiltration of a large part of the stomach may exist without filling-defect, in which case the absence of peristalsis may be a deciding factor.

Peristalsis is an important means of excluding cancer. If normal peristaltic waves can be seen following one another to the pylorus and passing chyme into the cap, then no stomach-wall affection exists in the motor area. The motor area, however, does not extend above the pars media as a rule and often not above the antrum, although it may exceptionally begin in the fundus as

shown by Case (27).

The purpose of stomach peristalsis is (1) to mix the stomach contents with gastric juice, promoting food solution, and (2) to assist in emptying the stomach. This latter function is subservient to the pyloric muscle, the keeper of the gate (Cannon, 1). The chemical reaction of the stomach contents is an important factor. In achylia the pylorus opens readily and stomach-emptying is rapid without marked peristalsis. In hyperacidity the pylorus does not open readily and, in severe cases, remains closed by spasm for hours. But peristalisis is markedly increased for a time, unless ulcer is present, in which case peristalsis may be partially suppressed. In cases of duodenal irritation or duodenal ulcer,

the pylorus opens very readily, at least during the first period after eating, and the peristaltic waves are rapid, deep, and vigorous. Under these circumstances there is rapid early emptying of the stomach, although there may remain a small bismuth residue from late pylorospasm.

Typical cases, therefore, of gastric carcinoma with achylia, and of gastric or duodenal ulcer with hyperacidity when the pylorus is not involved, may be differentiated by clear rönt-

genological characteristics.

When, however, the pyloric sphincter is involved in a carcinoma so as to produce obstruction, another röntgen-complex results. Kaestle (4) says:

In pyloric stenosis one finds deep and lively peristalsis beginning abnormally high in the stomach (Jonas and others). The finding of stenosis peristalsis in the dilated stomach warrants a diagnosis of "obstruction, not atonic dilatation." With progressive diminution of the muscular power in pyloric stenosis and obstruction—dilatation, a deepened peristalsis remains visible at least during the first period after reception of the meal. Later on one sees deep contractions of the stomach wall, only in the first moment after the reception of the food, sometimes only during the swallowing of the contrast pap. Finally, only by means of energetic massage of the stomach may one produce a stationary, deep, ineffectual contraction. This in the end dies out and the food mass lies motionless on the bottom of the stomach.

Besides the abnormally deep peristalsis one finds in pyloric stenosis a peristalsis abnormally directed toward the heart (Jonas). I hold antiperistalsis to be of little use as an early symptom of pyloric stenosis or even as a sign of it. Others see in it the characteristic indication of a lesion of the stomach lining, no matter of what origin. Abnormal innervations are causes of antiperistalsis in the

anatomically normal stomach.

The subject of antiperistalsis is an X-ray stormcenter. Schütz (28) is of the opinion that—

Antiperistalsis appears not to be observable in carcinoma, in which condition one also seldom observes the stages of normal peristalsis. The failure of normal peristalsis in a localized area of the stomach is an important

sign of wall-infiltration.

In the antrum, when power of contraction still exists, pathologic peristalsis shows itself by the incomplete emptying of the antrum or by complete emptying through a gaping pylorus. Pathologic peristalsis alone gives no grounds for the diagnosis of a new-growth.

Haudek (29) states that "antiperistalsis is a phenomenon which is interpreted differently by different observers," and proceeds to give the results of his investigations.

Gastric antiperistalsis consists in the passage of waves of contraction in a reverse direction; viz., from the pylorus to the cardia. These reverse waves usually arise in the antrum pylori, and may be followed along the greater curvature of the stomach to the point separating the lower from the middle third. The antiperistaltic waves vary in depth in the same way as the peristaltic contractions. We may frequently see a number of undulations passing in the opposite direction.

It is needless to say that the occurrence of vomiting or eructation has nothing to do with antiperistalsis of the stomach.

The first radiological observations of antiperistalsis were published by Holzknecht and Jonas. They reported six cases, four of which were due to pyloric stenosis. The sixth case was also one of mechanical obstruction in the pars pylorica, due to strangulation by a loop of distended intestine. From these cases Jonas concludes that a causal connection exists between antiperistalsis and pyloric stenosis. There is, however, another secondary, hitherto unknown, factor, which is the incitatory cause of the antiperistalsis. Later on a number of clinical observers, such as Ober, Schütz, Calm, and Wechsberg, showed the relation of antiperistalsis to pyloric stenosis, and this connection was confirmed by the radiologists Groedel, Faulhaver, Schmeiden, Haertel, and others.

Further research has shown that antiperistalsis is not, as was first supposed, confined to cases of pyloric stenosis. According to the dictum of Jonas, "As an early sign of pyloric stenosis antiperistalsis is the equivalent of the commencing gastric impediment, which is not as yet visible." On the other hand, Holzknecht and Robinson found antiperistalsis present in the gastric crises of tabes, and considered it in no way pathognomic of stenosis.

In one instance I saw antiperistalsis of the stomach and duodenum occurring in a case of deep-seated duodenal stenosis with insufficiency of the pylorus. At the operation it was found that the stenosis was due to an old ulcer-scar seated on the lesser curvature and an adhesion at the entrance of the jejunum. The pylorus was free. Schwarz has also observed antiperistalsis in a case where the operation revealed stenosis of the duodenum at the pars horizontalis superior, the stomach itself being entirely free.

To set the matter at rest I undertook an exhaustive examination of the records of Holzknecht's laboratory to see if antiperistalsis was ever met with in the organically sound stomach. I selected only those cases in which, from the result of the surgical operation or from the autopsy, it was possible to control the accuracy of the röntgen diagnosis. Of these cases I collected 90, 60 of which had been operated on. I found that in every single case of operation there was a record of some definite pathological alteration of the stomach. The result of this investigation therefore confirms my view that gastric antiperistalsis on the fluorescent screen is always associated with pathological alteration of the stomach wall or duodenum.

As regards the nature of the pathological alteration, this is usually pyloric stenosis, on a basis of carcinoma or ulcer. We meet with cases of florid ulcer and of stenosis due to the scars of healed ulcers. Both ulcer and carcinoma are frequently located in the pylorus. We meet with a large number of these cases, owing to the fact that the suffering compels the patient to seek aid at an early date, and moreover, pyloric stenosis is easy to diagnose.

This does much to make the phenomenon of antiperistalsis one of the valuable and dependable signs which the röntgenologist must be able to interpret in making a differential diagnosis in cases of suspected gastric carcinoma.

### RÖNTGEN-CLINICAL

A combination of clinical with röntgenological methods is commonly employed, especially during screen observations. The stomach area is palpated either by the heavily gloved hand or by

a Holzknecht spoon. By this means the movability of the stomach and the presence of adhesions may be determined. The flexibility of the stomach, as in scirrhus, is ascertained. localization of a tumor or the identification of a tumor with a filling-defect may be made. Pseudofilling-defects may often thus be discriminated and those due to spasm may be relaxed by massage or by the administration of atropin. Pain-areas may be investigated. Peristalsis and antiperistalsis may be aroused for observation by skillful palpation. Ordinary clinical examination offers few parallels to the certainty of judgment afforded by the ability to move the stomach, indent it, shift its contents, cause it to contract and relax, and to palpate or handle growths within flaccid abdomens, while the stomach shadow is visible upon the

The identification of a tumor within the abdomen as gastric or otherwise, is often the röntgenologic problem. When the growth produces a filling-defect in the anteroposterior silhouette, palpation is necessary to distinguish between an intra- and an extraventricular mass. In some cases, such as very fleshy patients, the tumor may be outlined by fuse wire upon the skin and the bismuth-filled stomach skiagraphed to show relations. When the growth is in the anterior or posterior wall it may be diagnosticated even when not palpable, according to Kaestle (4):

Many times the following observation suggests the probable diagnosis of a tumor of the stomach wall: Pressure upon the stomach in the region of the tumor through loose abdominal covering pushes the contrast-contents away, contrary to the rule, in a much greater circumference than corresponds to the pressure of the finger tips. The infiltrated stomach wall works like a pelotte which is set to the investigating finger. Similarly, a tumor of the rear stomach wall can serve as a buffer to the in-pressing finger and push away the stomach contents; it shows upon the lighting screen as a bright spot, which extends far beyond the circuit of the pressing finger (Holzknecht).

In considering probabilities, the röntgenologist may be guided in his examination of gastric tumors by Friedenwald's (30) summary:

Of 1,000 cases a mass (tumor) was detected in 719, 71.9 per cent, some time during the course of the disease.

Of the 719 cases in which a mass could be palpated, 217 presented this condition within six months after the first appearance of symptoms; that is, 30.1 per cent, while in 502 it was presented after six months, 60.9 per cent, from which it is evident that the appearance of a palpable tumor is over twice as common after the first six months after the first appearance of symptoms as before this period.

As determined by operation or autopsy the location of the growth was as follows: In 59 per cent there was pyloric involvement; in 8 per cent cardiac involvement; in 8 per cent involvement of the lesser curvature; in 4 per cent of the greater curvature; in 2 per cent of the fundus; and in 19 per cent there was a general involvement.

The identification of tumors with filling-defects is more satisfactory than the localization of cancer-foci by determining the area or point of pain. A pressure-pain point is more reliable than a symptomatic pain-area described by the patient. Lockwood (16) illustrates this point:

The character of the pain in cancer varies more than in ulcer. In a large number of cases — 37 per cent of the hospital series and 21 per cent of the private cases — no description of the pain is given. This large number of cases implies a certain indefiniteness in the character of the pain. The patient is unable to describe it as accurately as can the patient with ulcer, a fact which is of considerable importance in the differential diagnosis of the two conditions.

Friedenwald's (30) recent analysis of 1,000 cases of cancer of the stomach is authoritative:

Pain. Of the 1,000 cases pain was present in 931, 93.1 per cent. Location of pain. In 561 instances of all of the 931 cases affected with pain the pain extended more or less over the whole abdomen; it was limited to the epigastric region in 229 instances; in 68 to the lower abdomen; in 62 to the back, and in 11 to the chest.

Tenderness. Of the 1,000 cases tenderness was present in 893 cases, 89.3 per cent. The tenderness was localized in special areas in 265 cases, 26.5 per cent, and was general over the entire abdomen in 628, 62.8 per cent. This condition is to be contrasted with that found in ulcer in which of the 1,000 cases epigastric tenderness was present in 908 cases, 90.8 per cent. A tender area was noted to the right of the median line in 41 cases, 4.1 per cent; a dorsal, together with an epigastric, tender-spot in 523 instances, 52.3 per cent; a dorsal area alone in 25, 2.5 per cent.

Pain is not mentioned in any of the six cancer symptom-complexes of Holzknecht. For brevity and the accurate statement of probabilities these 12 symptom groups stand without a peer. They have been quoted more frequently than anything else in röntgenological literature. They are a pure example of Baconian induction from multiplied experiences, and embody the mature conclusions of Holzknecht and his two celebrated assistants, Jonas and Haudek.

Six of the twelve tables describe cases of cancer. They are quoted from Potter (31) as follows:

#### SYMPTOM-COMPLEX I

- 1. Bismuth residue after six hours.
- 2. Normal stomach shadow on the screen.
- 3. Achylia.

Diagnosis-small carcinoma of the pylorus.

#### SYMPTOM-COMPLEX II

- 1. No residue after six hours.
- 2. Marked defect in gastric shadow.
- 3. Horn-shaped stomach.

Diagnosis-carcinoma. No stenosis. Inoperable.

#### SYMPTOM-COMPLEX III

1. No residue after six hours.

2. Marked defect of the stomach shadow in the pars media or pars pylorica.

3. Horn-shaped stomach.

Diagnosis—carcinoma of the stomach. Operable.

#### SYMPTOM-COMPLEX VIII

1. Large sickle-shaped residue.

2. Marked defect in the filling of the pars pylorica.

Diagnosis—carcinoma on the base of an old ulcer, with stenosis.

#### SYMPTOM-COMPLEX IX

1. No bismuth residue after six hours.

Marked defect in the shadow of the pars pylorica or pars media.

3. Transverse constriction of the greater curvature.
Diagnosis—carcinoma on the basis of an old ulcer.
No stenosis.

#### SYMPTOM-COMPLEX X

r. Stomach empty after six hours. Head of the bismuth column in the splenic flexure of the colon.

2. Shortening of the stomach.

3. Contraction of the cardia. Diagnosis—carcinoma of the pars cardiaca.

The remaining Holzknecht symptom-complexes are:

#### SYMPTOM-COMPLEX IV

1. Small residue after six hours.

2. Sensitive pressure-point over the stomach.

3. Normal stomach-shadow.

Diagnosis—simple gastric ulcer. Other symptoms confirming this diagnosis are:

1. Antiperistalsis.

2. Displacement of the pylorus upward and to the left.

3. Snail form of the lesser curvature.

4. Stable transverse contraction.

5. Changing transverse contraction.

## SYMPTOM-COMPLEX V

1. Small bismuth residue after six hours.

2. Pressure-point.

3. Displacement upward and to the left.4. Snail form of the stomach shadow.

Diagnosis—old contracting ulcer on the lesser curvature of the pars pylorica.

#### SYMPTOM-COMPLEX VI

1. Small bismuth residue after six hours.

2. Pressure-point and resistance in the pars media.

3. Transverse contraction of the pars media.

4. Diverticulum without air-bubble in the smaller curvature; immovable.

Diagnosis—callous ulcer of the pars media.

#### SYMPTOM-COMPLEX VII

1. Large sickle-shaped bismuth residue after six hours.

2. Dilatation.

Loss of tone.

Diagnosis—old stenosis of the pylorus due to ulcer.

#### SYMPTOM-COMPLEX XI

1. Stomach empty in six hours. Head of bismuth column in the ascending colon.

2. Stomach shadow normal.

3. Pressure-point moving with the duodenum.

Diagnosis—ulcer of the duodenum.

#### SYMPTOM-COMPLEX XII

r. Stomach empty after six hours. Head of the bismuth column in ascending colon.

2. Stomach shadow normal.

3. No increased peristalsis. No antiperistalsis.

No sensitive pressure-point.
 Hydrochloric acid normal.
 Diagnosis—normal stomach.

In criticism of the method by symptom-complex, Case (32) says regarding Symptom-complex I:

In the symptom-complex noted above, the reasoning is as follows: (r) Achylia is always associated with hypermotility as long as the pylorus is free, the stomach emptying in two or three hours; (2) therefore, a residue after six hours must mean an organic obstruction, because (3) spasm of the pylorus is never associated with achylia, but

with hyperacidity.

The writer refers to the above symptom-complex of Holzknecht only to warn against its unreliability; for while it is true that in a certain number of cases such reasoning might lead to the recognition of an early pyloric neoplasm, the same reasoning in many other cases will lead to ignominious failure. The writer has seen cases fitting perfectly into the above symptom-complex, which at operation proved to be not malignant, but due to adhesion bands, pressure of extraventricular masses or gallstones, and sometimes no pathology at all could be demonstrated at operation. The writer is thankful that he was able to test out this matter in a manner which did not reflect unfavorably upon himself or the surgical staff through whose courtesy the rigid check-up was possible. Thanks to a routine which requires that all patients about to be subjected to laparotomy in the surgical department of the Battle Creek Sanitarium be first submitted to a thorough bismuth-meal examination of the entire gastro-intestinal tract, the writer has been able to check at operation the röntgen findings in hundreds of cases. For instance, in a patient operated upon for uterine fibroids, the surgeon as a routine procedure at operation examines and records the condition of the gall-bladder, the pylorus, the duodenum, the appendix, the terminal ileum, etc., so that, without working inconvenience to anyone, the pre-operative röntgen findings, negative or positive, even though not directly relating to the object of the operation, are corrected and future errors minimized. From his experience, thus secured, the writer seldom relies upon the symptomcomplex method of recognizing gastric carcinoma.

A similar opinion is expressed by George.

I have been unable to find specific criticism of any but Symptom-complex I, although general objections to the whole system have been urged. The improved plate-method enables the röntgenologist to detect very small filling-defects at the pylorus. If therefore we add to Symptom-complex I (4) filling-defect at pylorus, we bring it on a par with the other cancer-complexes. Each of them, excepting X, would now possess a filling-defect clause.

Holzknecht did not formulate a complex to cover scirrhous wall-infiltration. For the sake of completeness I would suggest the following:

#### SYMPTOM-COMPLEX XIII

- 1. No residue after six hours.
- No gastric peristalsis.
   Patent pylorus.
- 4. Wall-flexibility diminished.
- 5. Shrunken stomach, permanent.
- Diagnosis-scirrhous carcinoma of stomach-inoperable.

Symptom grouping, whether röntgenological or clinical, does not remove the necessity of individualizing each case. While Symptom-complex XIII seems to mean scirrhus and nothing but scirrhus, yet I find a case of "callous ulcer involving the entire stomach," described by Sasse (33) and reported by Knoke, who says:

Demonstration of an extreme case of contracted stomach resected *in toto*. The entire stomach was involved in a callous ulcer. The röntgen picture has shown it as a narrow shadow of about a finger's breadth, slightly arched and extending from the cesophagus to the region of the pylorus. It had been diagnosed clinically as malignant stenosis of the pylorus. The stomach wall was one-half centimeter thick, the submucosa being chiefly affected. Carcinoma could not be demonstrated. There had never been any bloody vomiting and blood could not be demonstrated chemically in the stomach contents. The patient bore the operation well and a year and a half later had gained 52 pounds in weight.

Many organic affections of the stomach may be imitated, as we have seen, by spasmodic states, such as pylorospasm, cardiospasm, incisura, and spastic hour-glass. Scirrhous carcinoma is no exception. We have to exclude a spasmodic contraction of the entire stomach when using Symptom-complex XIII. Kaestle (4) says:

A long enduring but finally relaxing contraction of the whole stomach is described by Swarz as a spasm of the whole ventriculum with open pylorus and a disappearance of all peristalsis, during which time the stomach is abnormally small and lies high and obliquely in the epigastrium. The cause of this spasmodic condition is stated by Waldvogel to be lead poisoning, excessive smoking, arteriosclerosis of the abdominal vessels, and various neuroses.

#### DIFFERENTIAL DIAGNOSIS

To assemble the results of the case-history, the nurses' charts, the physical examination, the laboratory analysis, and the X-ray findings, and by the exercise of learning and experience to draw therefrom a differential diagnosis, is clearly the work of the internist. For the röntgenologist to be expected to make a differential diagnosis from X-ray findings alone is obviously incompatible with a comprehensive view of what a modern diagnosis should be. The fact that in cancer of the stomach the röntgenologist is so often able to do this should not lead to the disregard, whenever possible, of the other factors of a diagnosis.

The missing premise of a diagnostic syllogism may often be found in the clinical record. A case history should be an indispensable preliminary to a röntgenological examination. Certain laboratory reactions are too important to be omitted from the reckoning of any one who presumes to make a diagnosis of gastric cancer. These are: the per cent of hydrochloric acid in the gastric juice, the excess of indoxyl in the urine, the Wassermann-Noguchi reaction of syphilis, the Abderhalden reaction for carcinoma, and the presence of occult blood in the fæces.

In Friedenwald's (30) 1,000 cases of gastric cancer, 89 per cent presented an entire absence of hydrochloric acid; 642 of the 1,000 cases were examined for occult blood in the stools and a positive reaction obtained in 92.5 per cent.

The quantity of indican or indoxyl in the urine has been shown to be very closely parallel to the quantity of hydrochloric acid in the gastric juice. Simon (35), who investigated this subject with particular care, says:

It has been pointed out elsewhere that it is possible to form a fairly accurate idea of the amount of free hydrochloric acid in the gastric juice by an examination of the urine in this direction. Large quantities of indican are thus eliminated in carcinoma of the stomach and exceeded only by those observed in cases of ileus, so that this symptom in my estimation is of considerable value in differential diagnosis, and is one, moreover, which has not received the attention it deserves.

The importance of the Wassermann reaction may be gathered from the testimony of rönt-genologists. Cole (13) says:

Syphilis of the stomach resembles cancer so closely that it would be a wise precaution to have the Wassermann test made in every case to eliminate the possibility of confusion.

White and Leonard (22) in their recent article, "The X-Ray Evidence of Early and Latent Cancer of the Stomach," say:

The presence of syphilis shown by skin or bone changes and a strong Wassermann reaction may seem to explain all symptoms of a general kind, loss of appetite, and moderate loss of weight, dull pains and distress, and even gastro-intestinal symptoms. Even the presence of blood in fæces or gastric contents may be explained by syphilitic ulceration of the gastro-intestinal tract, and thus the evidence of cancer may be confused and overshadowed by the presence of serious disease, syphilis, which is recognized.

The X-ray evidence in this case was definite and clear, but sometimes it is not. Syphilis sometimes resembles cancer too closely to be distinguished.

After X-ray examination we have two such cases, syphilitic patients, both of cancer age, classed among the "doubtful cases." One proved to have cancer also; the other was diagnosed as syphilis at operation and subsequent history for a year confirms it.

Lockwood (16) says:

It is estimated that there are on record in the neighborhood of 50 cases of gastric syphilis. It is probable, however, that the disease is much more frequent than this, and that it is our failure to correctly diagnosticate the ailment that accounts for its supposed rarity. It must be remembered, however, that ordinary ulceration of the stomach may occur in syphilitic persons with the same frequency as it does in those without this constitutional taint. Again, it must be remembered that an antisyphilitic treatment will favorably influence non-specific affectns in syphilitic patients improving their general health.

Syphilis of the stomach occurs in four principal forms: (1) syphilitic ulcer, (2) syphilitic tumor, (3) syphilitic pyloric stenosis, and (4) syphilitic cirrhosis.

Case (32) says:

There are cases, particularly the early cases, where, from the X-ray examination alone, one may only say that there is a mass, without venturing an opinion as to whether it is due to ulceration with inflammatory reaction or to malignancy. One must also think of syphilitic and car-cinomatous lesions, and the possibility of having to deal with a tuberculous mass.

Case's experience shows that the röntgenologist must also consider the possibility of tuberculosis in the differential diagnosis of gastric cancer. According to Lockwood (16):

Tuberculosis of the stomach is a disease of comparative rarity, as it is present in but 0.5 per cent of all autopsies and in but 2.3 per cent of the post-mortems done on those dead from tubercular disease. Tuberculosis of the stomach occurs in two principal forms: (1) tuberculous ulcer and (2) tuberculous tumors with pyloric stenosis.

While syphilis and tuberculosis of the stomach are rare, gastric ulcer nearly parallels gastric cancer in frequency. In Friedenwald's (30) series, 9.6 per cent of patients suffering from gastric disturbances were afflicted with cancer and 7.8 per cent with ulcer. The röntgenologist may find differentiation between these diseases a difficult matter, but possible in most cases.

Cancer cases usually come for examination late in the disease, ulcer cases early. This is because gastric cancer is one of the most insidious of human enemies. White complains that: "One of the greatest difficulties has been in getting the patient early. The first X-ray examination when positive has usually discovered welldeveloped, not early, cancer."

De Quervain's (36) experience is that:

There is necessarily in ulcer of the stomach, as also in carcinoma, a stage in which the röntgen pictures do not yet reveal any change. In this state stomach ulcer frequently produces severe trouble; carcinoma of the stomach as a rule not yet. In carcinoma of the lesser curvature the changes visible in the röntgen picture precede the clinical symptoms, whereas they follow in cases of ulcer. Inasmuch as the patient does consult us on account of actually felt trouble, we can conclude from this alone that in case of a normal stomach picture, carcinoma, to say the least, is very improbable, though a superficial ulcer may very well be present.

The mention of "normal stomach shadow" opens the way for much dispute. For our present purposes we are concerned with stomach-wall changes. The ability to recognize a normal stomach wall is the ability to exclude cancer. With normal stomach walls the peristaltic wave is a narrow circular constriction which passes slowly and evenly from its origin in the fundus or pars media to the pylorus. It may be a one-, two-, three-, four-, or five-cycle stomach, according to the number of peristaltic waves in progress at the same time. According to Cole (37): "The time it takes for any individual contraction to pass from the fundus to the pylorus usually does not exceed ten seconds."

If the peristaltic wave repeatedly dies out on reaching a certain area of the stomach wall and is resumed beyond, then we have evidence of a wall lesion at that level. If antiperistaltic waves can be detected in the greater curvature running from the pylorus toward the fundus, or if stenosisperistalsis is present, then we have evidence pointing to a lesion at the pylorus.

To determine whether or not such a lesion is cancer and not ulcer it is necessary to keep in mind a general symptom-grouping which may

be individualized according to the case.

Thus, delayed emptying, pylorospasm, spastic hour-glass stomach, the incisura, the "nischen symptom," with or without the gas-bubble, the location of the focus half-way on the lesser curvature, hyperacidity, the absence of the indican reaction, adhesions, and localized pressure-pain are against cancer and in favor of ulcer. On the contrary, prompt emptying, a loss of wallflexibility, a filling-defect, a tumor, anacidity, a large excess of indoxyl in the urine, a negative Wassermann, a positive Abderhalden, constant occult blood in the stools, and indefinite abdominal pain are all in favor of cancer and against ulcer.

The rule is that a gastric deformity due to cancer is an indentation, while that due to ulcer is a protrusion of the bismuth-filled stomach cavity (De Quervain, 36). In cases of callous ulcer, however, there is usually an indentation filling-defect which is indistinguishable from cancer. Kaestle (4) says, regarding such conditions:

In many cases of insuperable difficulty in the differential diagnosis between ulcer and cancer of the stomach, the röntgenologist finds himself in no different position from the surgeon or even the pathologist who may have the same difficulty in identifying the gross specimen after removal.

Cole (13) has wisely made the rule that—

Carcinoma, adenoma, myoma, sarcoma, and indurated ulcer will be regarded as gastric cancers because the surgical indication for all of them is the same and one can be differentiated from the other only by a careful microscopical examination of the specimen after its removal.

Late ulcer and early cancer are inextricably bound together. Holding (38) in his latest article provides a place for the transitional form of ulcer. Wilson (39) of the Mayo Clinic, assisted by McDowell, in a current article maintains his original conclusions on the development of gastric cancer from ulcer. Three hundred and ninetynine cases of gastric cancer have been worked up pathologically with extraordinary thoroughness and the following conclusion drawn:

It seems probable from a careful study of the clinical and pathologic evidence of this series of cases that gastric cancer rarely develops, except at the site of a previous ulcerative lesion of the mucosa.

It is evident that in a small per cent of cases a differential diagnosis between ulcer and cancer is impossible by the X-ray or by any method whatever. Nevertheless, in an unquestionable majority of cases a differentiation is possible. Holding (38) summarizes as follows:

#### Visualization

ULCER

CANCER

Small and recent; may be overooked on screen. Much more easily recognized on screen.

#### . Pain

Sharply localized pain point, which moves synchronously with respiration and has direct and constant relation to defect in bismuth shadow. Presents early.

Pain diffuse, if any, and apt to present late.

#### Esophagus

No retention in œsophagus, showing that walls of cardia are pliable. Frequent retention in esophagus, showing that walls of cardia are stiffened and not pliable.

### **Multiple Contours**

Not present in ulcer.

Scalloped contours
Finger-print contours
Conical contours
Superimposing test
Significant.

#### Hour-glass

Sacculated form of hour-glass. Sulcus bandlike. Segments equal.

Spasm.

Cicatrix.

Funnel-like form of hour-glass Segments unequal. No spasm. All deformity represents lesion.

#### Pyloric

Often causes pyloric stenosis, accompanied by hyperperistalsis and later dilatation.

May or may not cause stenosis and residue, according to location and character. If at pylorus neoplasm is apt to break down, become tunneled and infiltrate in the walls, so as to open the pylorus. Carcinoma of the lesser curvature frequently presents so far advanced as to be inoperable without affecting the pyloric outlet.

#### Residue

Ulcer often causes pylorospasm and six-hour retention because of hyperacidity. Cancer seldom causes pylorospasm and retention because of anacidity.

#### Parasecretion

Zone of parasecretion between magenblase and bismuth-shadow, showing hyperacidity.

Zone of parasecretion not shown because of anacidity.

#### Size of bismuth shadow of stomach

Acute ulcer: bismuth shadow diminished—(minus), due to spasm and defect in contour.
Chronic ulcer with stenosis and dilatation: bismuth shadow increased+(plus).

Bismuth shadow usually diminished—(minus) or shows a marked filling-defect.

#### Peristalsis

Hyperperistalsis if pylorus is

Diminished or absent peristalsis on account of fixation.

## Retroperistalsis

Retroperistalsis may present. Seldom seen.

#### Height of stomach

Stomach usually not so high.

Stomach usually high in epigastrium.

#### Persistent bismuth speck

Hemmeter's peristent bismuthshadow characteristic when seen. s Presents only rarely.

Hemmeter's persistent bismuth shadow may preesnt.

# "Nischen symptom"

Haudek's "nischen symptom" characteristic of a pocket when seen. Presents rarely.

Haudek's "nischen symptom" may be present, though rarely.

Adhesions causing filling-defects and stenosis are often difficult to identify. Palpations and changing positions of the patient are the maneuvers relied upon. Barclay (17) mentions the method by palpation.

Adhesions in some cases gave rise to indentations that were mistaken for carcinoma, and in one case a pure spasmodic contraction gave rise to the same mistake.

For the diagnosis of adhesions we have to depend on the fact that under normal conditions it is possible to manipulate the stomach through the abdominal wall and to determine more or less accurately the fixity or otherwise of the organ. Some cases are more or less obvious; e.g., adhesions of the lesser curvature to the lower border of the liver, but, like all other observations on the stomach, one must repeat the observation at a subsequent examination, for on more than one occasion I have found that the confirmatory examination revealed a perfectly normal stomach in cases where I had been quite confident that there were adhesions.

In some cases they cause inroads into the gastric cavity that are almost impossible to distinguish from carcinomatous inroads, and in Case 699 this mistake was made, while in Case 408 the stomach was segmented by a band of adhesions near the pylorus, and other small indentations were noted that suggested this diagnosis, although there was some doubt in my mind as to whether the case was or was not one of carcinoma.

# Case (32) illustrates one method of turning the patient as follows:

In differentiating between benign cicatricial stenosis of the pylorus and stenosis due to malignancy, the writer has found it of especial value to make the screen and plate examination with the patient lying on the right side, the tube behind the patient, and the screen or plate held vertically against the abdomen. In this manner it is possible to bring out the finest detail of the pyloroduodenal region often to better advantage than with the patient in the prone position, plate anterior. Unless the pyloric carcinoma has supervened upon an old stenosing ulcer, it is likely that the stomach will not be greatly dilated in pyloric cancer, for the reason that the malignant process has advanced too rapidly to permit extensive dilatation. In benign ulcerous stenosis, on the other hand, including those cases where the ulcer has later degenerated into malignancy, the long duration of the process permits enormous increase in the size of the stomach.

Adhesions from diseased organs outside of the stomach may deform the gastric silhouette and simulate filling-defects or even hour-glass contractions. One of the 72 gastro-intestinal plates exhibited by the writer in 1909 at the sixtieth annual session of the American Medical Association showed an hour-glass stomach with extensive filling-defects. The diagnosis of cancer of the stomach was made. At the autopsy the stomach was found bound down by numerous adhesions resulting from a cancer of the pancreas. No cancer of the stomach existed, yet there was in this case cancer cachexia, cancer pain, filling-defects, and hour-glass which was not spasmodic.

The hour-glass stomach may be placed under the head of adhesions, cancer, ulcer, or spasm. In it are united most of the phases of a differential diagnosis. Kaestle's (4) description of the hourglass from incisura is striking:

On the side of the lesser curvature, not in the long pouch of the stomach, lies the narrow place of the spasmodic hour-glass stomach. The constriction is an indrawing from the greater curvature and the tip of the constriction points like a finger to the diseased place on the stomach wall. . . . That a long-enduring tonic spasm in the stomach can occur without ulcer is questionable. . . . The carcinomatous hour-glass stomach is differentiated röntgenologically from the ulcer hour-glass stomach by the smooth edges and sharp limits of the narrow channel. In carcinoma the channel is longer and the constriction is less clearly defined.

Case (32) describes a spasmodic hour-glass resulting from a reflex incisura in cases of duodenal or gall-bladder disease. Barclay (17) has given hour-glass contraction much attention. According to him:

Quite a large number of spasmodic hour-glass stomachs have been examined and found at operation to show no trace of ulceration or other abnormality that by local action would cause the spasm (p. 64). . . . . Hour-glass contraction is frequently noted when there is severe constipation (p. 65).

Spasmodic contractions complicate differential röntgen-diagnosis at many points, some of which have already been discussed. A further quotation from Barclay (17) may serve as a caution against premature opinions:

I have seen pyloric obstruction, as indicated by seeing the greater part of the food still in the stomach after 24 hours, permanently *cured* by removing bad teeth.

In an article on "The Stomach as a Reflex Organ," Crane (40) states:

The stomach as a reflex organ responds to many pathologic foci within the body. The most important of these concern the appendix, the gall-bladder, the bile-ducts, and the duodenum. Also abscess of liver, constipation, toxæmias, and in women, gynecologic and obstetric affections bring about marked gastric disturbances.

# STAGE OF CANCER AT WHICH RÖNTGEN SIGNS BECOME OBSERVABLE

In scirrhous carcinoma the earliest röntgenologic sign is a local arrest of a peristaltic wave by a wall-infiltration. The peristaltic wave may be resumed beyond the lesion unless it lies too close to the pylorus, as is usually the case. This wall-infiltration must be sufficiently extensive to show on palpation a loss of wall-flexibility in order to support the sign of peristaltic arrest. If the scirrhus begins in the pylorus, the rigidity and permanent patency of the pyloric orifice may be an earlier sign.

In medullary carcinoma a filling-defect must be considered as the earliest definite sign. This, however, may be very small and yet identified with certainty by the serial plate method. The definite röntgen signs of medullary carcinoma are earlier than those of scirrhus.

Most of the patients with gastric cancer, which seem by case-history and clinical examination to be in the early stages, when examined by the X-ray prove to be well-developed cases.

White and Leonard (22) answer the question conservatively but fairly:

For early diagnosis of cancer we must see the patient early.

What brings the patient for examination? His symptoms. We shall not see him till he develops some. These early symptoms and signs of cancer are often vague. The important question is: Are the early anatomical changes in gastric cancer, discoverable by X-ray, more definite and characteristic?

We have tried to avoid delay in examinations and have used the X-ray in all suspicious cases in hopes of discovering the anatomical signs of early cancer.

This faithful search for early cancer in a large number of suspected cases has given little result. The earlier the cancer the less clear the picture with the X-ray, as with other methods, until a point is reached where the evidence is very doubtful indeed. In primary cancer the small area of induration in the earliest cases may be in no wise characteristic, and in cancer developing on ulcer the transition stage may be very difficult or impossible to diagnose by the X-ray.

In short, while anatomical changes in the stomach wall, discoverable by the X-ray, accompany the early clinical symptoms, the anatomical changes themselves are not always definite and characteristic of cancer.

# RELIABILITY OF THE RÖNTGEN SIGNS OF GASTRIC

Most of the testimony on this point is incompetent, irrelevant, and immaterial. No one can doubt that many mistaken diagnoses have been

revealed by operation. Röntgenologic competency has been gained in this way. Doubtless many mistakes will continue to be made for the same reasons that other diagnostic mistakes are made. But the röntgenology of gastric cancer has been developed to a point where such errors are rare when the röntgenologist takes care not to draw conclusions beyond his premises.

Case (32) testifies as follows:

The writer would not presume to state that carcinoma of the stomach could not exist in a lesion too small for detection by carefully conducted röntgenographic search, but he will place on record the statement that up to the present moment, since the time he was fitted by equipment and experience to make these thorough studies, not a single case of carcinoma of the stomach to his knowledge has been revealed at operation where previous röntgen examination had failed to show organic lesion.

# Cole (13) gives similar testimony:

A negative or positive diagnosis of gastric cancer has been made in each of the 616 cases examined by means of serial röntgenography, and in not a single case, to my knowledge, where I have made a negative diagnosis of gastric cancer or indurated gastric ulcer, has surgery or autopsy proved the existence of such lesion, nor has surgery or autopsy failed to reveal a definite organic lesion requiring surgical procedure in any case where a positive diagnosis of carcinoma or indurated ulcer has been made.

Six hundred and sixteen cases have been examined by serial röntgenography. Ninety-seven cases have been operated on. In ninety-four of the cases the röntgenological diagnosis was proved absolutely correct. In three cases the surgical findings were more or less at variance

with the röntgenological findings.

#### Carman (21) is able to state that:

In enumerating the signs and symptoms he (Wm. Mayo) has placed first the presence of a palpable tumor in 67 per cent, food remnants in 53.3 per cent, and, third, the

röntgen ray

The work of the last few months at the Mayo Clinic with the röntgen ray has necessitated a change in the order of importance of these signs, the röntgen ray showing diagnostic signs in 93 per cent of the cases. This fact is very encouraging, as it will mean an earlier diagnosis with surgical interference and a higher percentage of cures.

White (22), as an internist, gives a summary of the work of himself and Leonard, which may be considered as a just estimate of the present value of röntgenology in gastric cancer.

X-ray evidence has been valuable in helping to rule out cancer in a long list of suspicious cases. In no case where a normal picture of the stomach was found has cancer been

proved to exist.

X-ray evidence has its limitations. After all examinations a doubtful group remained, about twice as large as the group of latent cases discovered. These were cases of disease at the cardia or where the diagnosis lay between

cancer and ulcer or syphilis.

In spite of these limitations and errors the X-ray evidence has distinctly improved our diagnosis. In 34 operated cases the correct diagnosis before X-ray examination was 83 per cent, after X-ray 89 per cent. It is almost needless to say that we have studied the X-ray findings in connection with the other clinical data and have not

attempted to build a diagnosis on X-ray data alone. This addition of the X-ray method to our other examinations gives an accuracy and completeness to our diagnosis impossible with either alone.

In addition to aiding in diagnosis, the X-ray evidence has definitely located the cancer, shown its size and extent, and helped decide about operability. It may show that a cancer with marked symptoms is small and mobile and

ideal for operation.

In short, the X-ray evidence has been a help in discovering and localizing latent cancer and an equal help in ruling out cancer. Our known mistakes have been few and the group of doubtful cases rather small, and it seems reasonable to expect that with better technique and greater experience less mistakes will occur and less cases remain doubtful, and with more early and frequent X-ray examinations of patients of cancer age, that early diagnosis will be more frequently made, and latent cases discovered earlier, so that radical operation will be possible.

In conclusion it may be said that the röntgenology of the gastro-intestinal tract has been brought to a precision which entitles it to rank with the most approved clinical methods. Success in this field requires a kind of training and experience which may not always be possessed by highly competent surgeons and internists. The röntgenologist is needed as a consultant, and he in turn needs the assistance of his confrères. The diagnostic concept of the present day demands a survey of the entire case with a detail map of the gastro-intestinal tract for either a medical or a surgical campaign.

Note.-I am indebted to my wife, Caroline Bartlett Crane, for translations from the German. Also I am indebted to Drs. Hulst, Hickey, Potter, and Case for generous aid in obtaining the literature of this subject.

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# ABSTRACTS OF CURRENT LITERATURE

# GENERAL SURGERY

# SURGICAL TECHNIQUE

#### ANÆSTHETICS

Keim, K. F.: Scopolamine-Morphine and Scopolamine-Pantopon Anæsthesia in Conjunction with Inhalation Anæsthesia (Die Skopolamin-Morphium und die Skopolamin-Pantoponnarkose in Verbindung mit Inhalationsanästheticis). Wien. klin. Rundschau, 1914, No. 32.

By Surg., Gynec. & Obst.

The author's conclusions in regard to a combination of scopolamine-morphine and scopolaminepantopon anæsthesia with inhalation anæsthesia may be summed up somewhat as follows:

1. Every anæsthetic is to some degree dangerous to life, especially if it is a prolonged and deep

narcosis.

2. The most dangerous seem to be the inhalation anæsthesias, and of these chloroform is the most dangerous.

3. The least dangerous are the mixed narcoses. In these relatively the least amount of anæsthetic is required, and, according to Bürger, narcotic mixtures do not add their combined actions but rather effect a potentizing action.

4. Injection narcosis with scopolamine-morphine or scopolamine-pantopon in big doses is likewise

dangerous to life.

5. As it is only rarely possible to obtain complete anæsthesia with the injection of narcotics it is advisable to support it with ether given by the drop method.

6. A moderate dose of narcotics by injection and a careful administration of ether insures a certain amount of safety and decreases the dangers of this method, especially of sudden death, to a mini-

7. The advantages of scopolamine-morphine and scopolamine-pantopon anæsthesia are apparent. The absence of physical excitement before and after the operation, the minimal danger of the narcosis during the operation, the almost complete disappearance of post-operative dangers, such as vomiting, hæmorrhage, pneumonia, wound pain, and in addition the post-operative twilight sleep and amnesia, are invaluable advantages.

8. The scopolamine-morphine and scopolaminepantopon anæsthesia have no strict contra-indica-

9. Scopolamine-pantopon anæsthesia is preferable to scopolamine-morphine anæsthesia. Its disadvantages are troublesome thirst and the danger of

oligopnœa.

10. The decrease of the circulatory volume after the method of von Brunn does not seem to have any advantages, as a decreased amount of ether is re-

II. A pure, stable preparation is necessary for

success.

12. The injection-inhalation anæsthesia appears to be the most humane of all anæsthetics, so long as it is impossible to approach Kocher's ideal, which requires the most complete anæsthesia possible for each individual part of the human body to be operated upon. L. A. JUHNKE.

Gfroerer: Experiences with Lumbar Anæsthesia (Erfahrungen mit Lumbalanästhesie). München. med. Wchnschr., 1914, No. 36. By Surg., Gynec. & Obst.

Spinal anæsthesia was taken up at the Würzburg clinic in 1907 and since that time it has been employed in 1,223 cases. By employing tropacocaine as the anæsthetic and morphine scopolamine before the anæsthetic, results have been much improved, complete failures have been rare, and the number of cases in which the anæsthesia lasted over 45 minutes has increased. Under a carefully developed technique the number of cases in which the anæsthesia lasted until the end of the operation was in-

creased 4.34 per cent. The technique consists in the use of 5 per cent tropacocaine in a .6 per cent sodium chloride solution as the spinal anæsthetic and is preceded by one injection of .6 to .8 ccm. of a solution of .or morphine and .0004 scopolamine. The higher grades of excitement observed with larger doses of scopolamine were not seen. The most frequent disturbances during the operation were choking spells and vomiting. Severe complications during the operation were observed o times; in 4 of these a severe collapse occurred and in one instance the collapse was accompanied by an ascending paralysis of the thorax musculature. No deaths occurred. Among the post-operative disturbances headaches were most frequent, but these were present only in 1.4 per cent of cases. Two cases of abducens paresis which appeared were attributable to the spinal anæsthesia.

The author recommends the method highly.

L. A. JUHNKE.

Siegel, P. W.: The Paravertebral Injection Anæsthesia (Die paravertebrale Leitungsanästhesie). Deutsche med. Wchnschr., 1914, No. 28. By Surg., Gynec. & Obst.

The author employed this, his own method, in 150 gynecological and in 20 obstetric operations. including all the usual operations of gynecology and several surgical laparotomies and nephrectomies. with excellent results. A large quantity of weakly concentrated .5 per cent solution of novocainesuprarenin (Hoecht) was employed. The anæsthesia is based upon the anatomic distribution of the nerve supply for each part of the abdomen and perineum — only the segments of the nerves are injected which supply the part to be operated on. Contra-indications were not found. The secondary actions and poor anæsthetic phenomena were so slight as to be negligible. In 60 per cent of cases complete anæsthesia without any addition of inhalation anæsthesia was obtained. The author believes that a thorough trial of the method, which is clearly presented, should be undertaken so that its advantage may become available to everybody. L. A. JUHNKE.

Eckel, A.: Critical Review of Local Anæsthesia of the Abdominal Cavity (Kritische Beiträge zur Lokalanästhesie der Bauchhöhle). Wien. klin. Rundschau, 1914, No. 30.

By Surg., Gynec. & Obst.

According to Lennander the peritoneum of only the anterior and posterior abdominal wall, of the pelvis, diaphragm, and that part supplied by spinal nerves alone is sensitive, whereas the visceral peritoneum is not at all or only slightly sensitive. It is therefore only necessary to anæsthetize the abdominal wall and peritoneum to perform a laparatomy under local anæsthesia. Braun made practical infiltration anæsthesia for operations of long duration by combining novocaine and suprarenal extract in the local anæsthesia of Reckus and the infiltration anæsthesia of Sleich. A further advance is the circulatory analgesia of Hackenbruch. These methods suffice in general for all interference in the abdomen if no extensive adhesions exist; for the gynecologist ventrofixation and ovariotomy must be considered. Local anæsthesia is, therefore, capable of supplanting general anæsthesia in many abdominal operations, especially if scopolaminemorphine is injected before. Indications are: old age, ateriosclerosis, vitum, cordis, pulmonary tuberculosis, myocarditis, Basedow's disease, goiter, and diabetes. The anæsthesia of plexuses increases the first still further.

The paravertebral injection method of anæsthesia permits the performance of kidney operations, stomach resections, gastro-enterostomies, cholecystectomies, and drainage of the gall-bladder. The weak point in the method is the large quantity

of novocaine which must be employed.

In regard to spinal anæsthesia, surgeons have been slow to adopt the method of the gynecologists, on account of numerous deaths and other accidents. Of course with proper technique like that of Döderlein and Krönig these unfortunate results may be avoided; at any rate the complicated technique can be mastered only in large clinics; the surgeon with little material cannot learn it in all its detail.

The use of extradural or sacral anæsthesia is too recent to pass fair judgment on. Its advantages are that the solution can never reach the brain, and the ganglion cells of the spinal cord are likewise not in contact with the solution. The injury to the veins can be avoided if the injection is made in the elevated pelvis position. The action, however, is not certain and general narcosis must frequently be employed. The method is indicated in young and middle-aged persons not too fat, and is contraindicated in cases of large tumors within the abdomen. L. A. JUHNKE.

# SURGERY OF THE HEAD AND NECK

### **HEAD**

Müller, R.: A Case of Complete Scalp Evulsion (Ein Fall von volkommener Skalpierung). Beitr. z. klin. Chir., 1914, xciv, 10.

By Surg., Gynec. & Obst.

The author reports a case of complete scalp evulsion ending in entire recovery within eight and one-half months. The treatment consisted in Thiersch grafts of autoplastic and heteroplastic origin.

The case is of interest insofar as three distinct grafting operations were necessary, the patient having two attacks of erysipelas between the operations, each arising not from the grafted area but from a small rhagade near the nose. One

attack occurred four days after a grafting operation, and in spite of the attack, which involved the entire grafted area in addition to the face, the newly placed Thiersch grafts took nicely. The heteroplastic grafts, as in previously reported cases, did not take L. A. JUHNKE. in this case.

Bryant, W. S.: Treatment of Purulent Streptococcic Cerebrospinal Meningitis. Surg., Gynec. By Surg., Gynec. & Obst. & Obst., 1915, xx, 240.

The treatment of septic meningitis, as emphasized by the author, should be developed chiefly along the line of control of the toxæmia and bacteræmia. The aim and object of therapeutic measures, aside from the relief of the intracranial pressure, consists in the control of the life-threatening sepsis.

From his experience the author believes that the stimulating effects of magnesium sulphate can be advantageously utilized in the management of meningitis, as well as in the management of other toxic conditions in the domain of otolaryngology. He has used magnesium sulphate for nearly ten years, and the results gained by its use are highly beneficial in both mild and severe infections. The patient is given by mouth as much well-diluted magnesium sulphate in repeated small doses as can be tolerated without producing too strong a purgative effect. Under ordinary conditions it is not necessary to revert to the intravenous injection of magnesium sulphate, the emergency procedure used in obstetrical infections. The author points out the rational conclusion that the same general treatment should benefit streptococcic meningitis and puerperal streptococcic septicæmia, as both are due to the same bacterial invasion.

The author refers to the history and treatment of a patient 22 years of age, who under this medication recovered from a severe attack of purulent streptococcic cerebrospinal meningitis.

The author's conclusions are as follows:

The combination of our experience as otologists with the experience of obstetricians makes the outlook for successful treatment of streptococcic cerebrospinal meningitis appear much brighter than hitherto. Otolaryngologists should accomplish as good results in cerebrospinal meningitis as the obstetrician obtains in cases of puerperal sepsis. Although the surgeon can readily protect the patient from death by intracranial pressure, the management of the sepsis is quite another problem. This problem of sepsis has received more attention from the obstetrician than from any other medical group. The treatment should be focused on decompression, local and systemic drainage, administration of magnesium sulphate, and stimulating general hygiene.

#### NECK

Hesselberg, C.: A Comparison of Autoplastic and Homeoplastic Transplantation of Thyroid Tissue in the Guinea Pig. J. Exp. Med., 1915, xxi, 164. By Surg., Gynec. & Obst.

The author's purpose in this work was to trace the fate of the thyroid gland after homeoplastic transplantation and to compare it with the behavior of this tissue after autoplastic transplantation. In these experiments the author made use of guinea pigs, working always on two animals, the grafts being placed in the neck and abdominal region of the animals, through small skin incisions. The author's series includes 75 animals with more than 140 grafts. The animals were killed at intervals of one to fifty-two days after the transplantation, and the transplanted tissue examined microscopi-

cally and in a general way.

For a short period of time after operation no difference was seen in the behavior of the thyroid after auto- and homeotransplantation. Very soon, however, destruction of follicles began to take place in the homeografts. This destruction was not caused by a direct primary disintegration or solution of follicles, but depended on the destructive activity of (1) the lymphocytes, and (2) of the connective tissue of the host tissue. The former invaded the follicles and destroyed them directly; the latter grew into the homeografts in larger quantity than into the autografts. In the former it soon became fibrous and hyaline; in the latter it remained cellular. The fibrous connective tissue surrounded and compressed and thus destroyed the follicles. In some homeografts destruction by means of lymphocytes, in others by connective tissue, preponderated. The rapidity with which the destruction took place in different homeotransplants also varied. A much better blood-vessel supply devel-GEORGE E. BEILBY. oped in the autograft.

# SURGERY OF THE CHEST

#### CHEST WALL AND BREAST

Reid, M.: Bilateral Myeloid Chloroma of the Mammary Gland (Über ein doppelseitiges myeloides Chlorom der Mamma). Beitr. z. klin. Chir., 1914, xcv, 47. By Surg., Gynec. & Obst.

Chloroma belongs to the small group of interesting new-growths that owe their name to their color. They originate in the periosteum, generally of the skull bones, and show unlimited proliferation into the soft parts. They involve the lymph-glands in the region and are accompanied by the blood-picture of leukæmia. They are divided into lymphoid, myeloid, and myeloblastic chloroma, depending on the type of the tumor-cells and the blood-picture.

This case is described as being of special interest because it did not originate in the periosteum and there was no change in the blood-picture. The tumors in both mammary glands were of the same type. Macroscopically they looked like sarcomata with a green color; microscopically they were found to be made up of cells resembling the cells of the bone-marrow, both types being represented — myeloblasts and erythroblasts. The gland tissue, which could be seen between the tumor masses, was compressed and atrophic. The axillary glands were infiltrated with cells precisely just like those in the mammary tumors.

This is the only case of myeloid chloroma of the soft parts not accompanied by the picture of leukæmia that has ever been reported. Six cases of chloroma of the mammary glands have been reported in recent years. In 3 of the 7 cases (including the present one) diagnosis was not made until operation;

in the other 4 the diagnosis was made from the blood-picture. This shows the necessity for making blood examination in mammary tumors, especially in sarcomata. The green color is a valuable aid in diagnosis, but it is well known that many leukæmic tumors do not show the characteristic color of chloroma.

This case is of especial interest as regards the question of the relation of these tumors to leukæmia. Many authors have held that chloroma was a symptom of lymphatic or myeloid leukæmia, while others have held that it was a primary sarcoma accompanied or followed by blood changes.

A. Goss.

Zinn, W., and Mühsam, R.: Extrapleural Tho-racoplasty in Pulmonary Tuberculosis and Bronchiectasis (Über extrapleurale Thorakoplastik bei Lungentuberkulose'und Bronchiektasen). Berl. klin. Wchnschr., 1915, lii, 45, 71.

By Surg., Gynec. & Obst.

The authors report 5 cases of tuberculosis and 6 of bronchiectasis operated upon by extrapleural thoracoplasty. The tubercular cases had been growing worse under the usual methods of treatment. In none of the cases was the other lung involved at all, or if so only slightly with no tendency to progression. Pneumothorax was either impossible or ineffective on account of adhesions. Extrapleural thoracoplasty was successful in 4 of the cases. The fifth, in which the patient died, was complicated by intestinal tuberculosis, which is generally regarded as a contra-indication to operation.

In severe cases Sauerbruch's method of resection is recommended; viz., extensive resection of the greatest possible number of ribs, from the first or second to the eighth, tenth, or eleventh, depending on the case. The results of partial thoracoplastic operations have shown that they are ineffective in most cases. Complete thoracoplasty brings about contraction of the lung, functional rest, changes in the blood and lymph circulation, and healing of the tuberculosis by inclusion of the foci in new-formed connective tissue. The röntgen picture shows the degree of contraction.

The clinical signs following the operation are decrease in fever and sputum, disappearance of tubercle bacilli from the sputum, inprovement in the general condition, and increase in weight. The operation is so much more severe than pneumothorax that it should be performed only when the latter is impossible on account of adhesions.

The surgical treatment of bronchiectasis is more discouraging; it is difficult to obliterate the cavities because of the rigidity of their walls. Better results can probably be obtained by operating earlier, as

advised by Garré, Körte, and others.

Three of the authors' 6 cases are still living and improved, though none of them can be regarded as definitely cured. The chief danger of the operation, aside from shock, is that of post-operative empyema. This is greater if the pleura is injured. Most

surgeons prefer local anæsthesia for the operation, but the authors have not found that shock was less with local than with general anæsthesia. They now prefer to operate under light general anæsthesia, preceded by scopolamine-morphine. A. Goss.

Friedrich, P. L.: The Decompressive Bursting of the Thorax by Means of Longitudinal Sterneotomy (Die dekompressive Thoraxsprengung durch longitudinale Sternotomie bei die Luftwege komprimierendem, Aneurysma und Tumoren des Mediastinums). Beitr. z. klin. Chir., 1914, xciii, By Surg., Gynec. & Obst.

The author describes a method for enlarging the thoracic cavity in cases in which the intrathoracic tension has been increased by mediastinal tumors, aneurisms, etc., leading to severe respiratory and circulatory disturbances. He reports in detail 5 or 6 cases in which he performed longitudinal sterneotomy — a longitudinal division of the sternum — with excellent results in all except one case.

In all the cases he was dealing with encroachment of the organ in the mediastinum by tumor or aneurism leading to respiratory difficulty, cyanosis, inequalities of radial pulse, rapid heart, displacement of the heart, compression of the lungs and trachea. The operation was performed with an electric saw, the sternum being divided into two equal parts and the parts separated up to 5 cm. In case the tumor is adherent to the sternum it must be freed from it before separation of the two parts can be accomplished.

In one sterneotomy performed on an old man with senile rigidity of the thorax, Friedrich failed to secure the separation after division of the sternum. The skin alone is sutured after the division, leaving a defect of about 3 to 3.5 cm. The effect was excellent in all cases except in the senile case mentioned. The respiratory difficulty, cyanosis, and cardiac embarrassment receded immediately, so that the patients were able to be about in a few days. Excellent tables and radiographs accompany the article. L. A. JUHNKE.

Nordmann, O.: Experimental and Clinical Study of the Thymus (Experimentelles und Klinisches über die Thymusdrüse). Arch. f. klin. Chir., 1914, cvi, 172. By Surg., Gynec. & Obst.

Our rather limited knowledge of the effect of hypofunction of the thymus gland is based entirely on animal experiments, as there are no known cases in literature of aplasia of the thymus. Klose and Basch found on extirpation of the thymus in young dogs that there were marked changes in the bones, resembling those of rickets. But Nordmann removed the thymus of newborn dogs and came to the conclusion that the organ has no importance in the growing body and that its removal has practically no effect. He thinks the difference in his results and those of Basch, Matti, and Klose is due to the fact that certain bone changes occur in dogs as a result of domestication, and it was these changes which the above authors attributed to removal of

the thymus. The changes may have been due in part also to chronic infection from the wound. He observed such changes in some cases where the wounds did not heal without suppuration.

Hyperfunction of the thymus is sometimes manifested as Basedow's disease. There are cases of Basedow's that are caused by the thyroid alone, some by both thyroid and thymus, and some, he thinks, due to the thymus alone. He describes a case of the latter kind. Among 23 cases of Basedow's disease operated upon 3 died as a result of the operation. These deaths were he thinks due to a persistent thymus gland. The remaining 20 cases, which recovered after operation on the thyroid, were due to thyroid disease. Unfortunately neither percussion nor röntgen examination can be relied upon to demonstrate the presence of a persistent thymus. Thymic asthma is due, not to mechanical pressure of the thymus on the trachea or nerves, but to hyperfunction of the thymus. A. Goss.

#### PHARYNX AND ŒSOPHAGUS

Meyer, W.: Further Experience with Resection of the Esophagus for Carcinoma. Surg., Gynec. & Obst., 1915, xx, 162. By Surg., Gynec. & Obst.

In accordance with his conviction, previously expressed, that every case of resection of the œsophagus should be published, the author reports four further cases treated by this operation, making eight in all, the report of the first four having appeared in the same journal, December, 1912. None of the patients survived operation, although one of them, a man of 68, gave promise of recovery, when an exudative septic pleurisy with suppression of urine caused death a week after the operation.

Meyer adds the history of a ninth patient in whom the first stage of resection had been successfully done as planned. The œsophagus had been divided between the aortic arch and the cardia; each end was inverted, the proximal doubly. A free fascia transplantation upon the latter, which had been planned, was omitted in order to save time. Postoperative drainage under differential pressure was The patient was out of bed on the fifth day; as a result of the eversion of the proximal stump, he developed an esophageal thoracic fistula on the fourteenth day. He succumbed on the twentieth day after operation for bronchopneumonia, due to perforation of the tumor into the bronchial tree.

Early improvement in the results of this operation is to be hoped for. The following three recommen-

dations are made:

1. More careful selection of cases for radical operation, particularly during the thoracotomy.

2. Removal of the proximal œsophageal stump from the posterior mediastinum and subcutaneous transposition antethoracically.

3. Post-operative pleural drainage.
The author believes that infiltrating carcinomata behind the aortic arch, which have produced clinical symptoms for several months, should be excluded from radical operation, at least for the present. Otherwise he is in favor of resecting every malignant stricture of the esophagus, no matter in which portion of the tube it is found.

Reviewing from this standpoint the 8 resections so far reported by the author, it appears that only 2 were suitable cases for operation. Both died of pleuritic effusion, the wound having been hermetically closed. One at least would have had a fair chance of recovery had drainage been employed.

# SURGERY OF THE ABDOMEN

#### ABDOMINAL WALL AND PERITONEUM

Goebel, C.: The Closure of Defects of the Abdominal Wall (Zur Frage des Verschlusses von Bauchwanddefekten). Beitr. z. klin. Chir., 1914, xciv, 14. By Surg., Gynec. & Obst.

The author reports three cases in which large defects of the abdominal wall resulted from several causes and in which he employed relaxation incisions laterally to the defect in order to obtain primary union after closure of the defect. principle of the operation is to make long relaxation incisions through all layers of the abdominal wall, skin, fascia, and muscles to the peritoneum, followed by wide tamponade with iodoform gauze to prevent pyocyaneous infection. In cases of extensive fæcal fistulæ after closure of the bowel wall the abdominal wall is closed completely; thereby the bowel suture is reinforced and infection of the belly wall suture line is prevented. The relaxation incision is allowed to granulate over. The question

arises: What is the probability of hernia in the scars of the relaxation incisions? Goebel's conclusions are as follows:

In spite of extensive eczema in the neighborhood of the fæcal fistulæ primary union resulted in each instance, as dead spaces were entirely obliterated.

The relaxation incisions were made in part through the transversalis muscle, and in spite of prolonged tamponade healed with a firm scar without developing a hernia (after 1 and 4 years, respectively), in part through the rectus muscle longitudinally, and here also a firm scar resulted without any signs of hernia appearing. For tamponing purposes iodoform gauze should be employed.

The principle of relaxation incisions would be applicable in the closure of large ventral hernias and in the closure of tense abdominal wall wounds.

The appearance of poor operative hernias apparently are favored by suppuration of the musculature and inactivity of the latter following the severing of nerve filaments. L. A. JUHNKE.

Loth: Pseudomyxoma of the Peritoneum and Vermiform Appendix (Über das Pseudomyxoma peritonei e processu vermiformi). Beitr. z. klin. Chir., 1914, xciv, 47. By Surg., Gynec. & Obst.

The author describes a case of pseudomyxoma originating from the appendix. Under the symptomcomplex of an acute appendicitis the disease commenced and ran the course of an acute attack of appendicitis, gradually receding. The patient had several attacks and finally consented to be operated upon. On operation a club-shaped appendix was found, the proximal end entirely obliterated and the distal end showing a perforation surrounding which the peritoneum was covered with the myxomatous-like mucosa. The appendix was removed, and the myxomatous structure was peeled off the surrounding tissue on which it had been deposited. It was peeled off easily and did not invade the tissues per se. As it seemed to be deposited there from the appendiceal perforation without showing any tendency to invade the structures per se, it was not deemed necessary to resect any of the surrounding tissues. Complete recovery resulted and the patient -3 years later—still remains well. L. A. JUHNKE.

Santy, P.: Irrigation of the Peritoneum with Ether: an Experimental Study (Le lavage du péritoine a l'ether; recherches expérimentales). Lyon chir., 1914, xi, 313.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Ether applied to the peritoneum of an animal that is not anæsthetized produces considerable pain. If, after introduction of the ether, the small abdominal wound is immediately closed, or if the ether is injected through the abdominal wall with a syringe, marked meteorism results from the ether vapor which develops. Twelve centimeters of ether in a rabbit weighing 1,000 gr.— corresponding to 500 ccm. in a man weighing 65 kg.—produces deep coma, cyanosis, dilatation of the pupils, and death. One grain of ether to the kilogram of weight, injected intraperitoneally, produces anæsthesia for about an hour. The ether does not act so quickly when used in any other way. If, in animals of the same size, 20 to 30 grains of ether are introduced into the abdominal cavity after laparotomy and the abdominal wall is not closed until the ether vapor has passed off so that the intra-abdominal pressure does not rise, only slight symptoms of intoxication appear. The small intestine contracts strongly when touched with ether. The large intestine shows a slight dilatation.

The animals so treated were left alive for varying lengths of time in order to study the peritoneal injuries produced by the ether. These injuries were apparent for the first few days as ecchymoses and hyperæmic places that were visible macroscopically. Microscopically, the endothelium was injured. The cells were contracted and some of them discharged. The remaining cells increase and after twelve days the endothelium is completely restored. Connective tissue, which is also irritated

by the ether, becomes thicker. The injuries to the peritoneum are much less than might be expected. The only danger to avoid is the immediate closing of the abdomen.

Amstad.

Ramstad, N. O.: Subphrenic Abscess. J.-Lancet, 1915, xxxv, 39. By Surg., Gynec. & Obst

The subphrenic space is divided by the falciform ligament of the liver into right and left spaces, which have independent lymph-channels and drain different parts of the abdomen. These spaces may be infected in various ways:

1. By direct extension from neighboring organs.

2. As a result of general peritonitis.

3. By infection from the appendix through the rectocæcal lymphatics.

4. By extension through the portal vein, or following disease of the gall-bladder or the liver, the kidneys, stomach, pancreas, and spleen.

More than half of all cases originate in the appendix, the next most frequent cause being ulcers of the stomach or duodenum. The pus most often contains colon bacilli, although mixed infection is the rule.

Subphrenic abscesses have a tendency to perforate the diaphragm, but seldom the peritoneal cavity, stomach, or other viscera. There results an empyema or lung abscess, or, if a bronchus is perforated, the expectoration of foul pus.

The symptoms are not always typical. With a history of a previous abdominal lesion, there develops a gradually increasing fever, malaise, occasional vomiting, slight respiratory pain on the right side, tenderness over the same region, and a high leukocytosis. Percussion shows a convex line of dullness above the diaphragm, and on auscultation there is lessened respiratory sounds with a few râles. Exploratory puncture and the X-ray are of advantage in diagnosis, the plate showing the high convex line of the abscess instead of the straight line of an effusion

Early drainage of a subphrenic abscess increases the chance of recovery. Occasionally drainage may be done through the lumbar region, but as a rule the abscess is too high and the transpleural method must be used. After resection of the eighth or ninth rib, the two leaves of the pleura are accurately sutured together before they are incised. Because of the weakened condition of these patients and on account of the difficulty of respiration, local anæsthesia alone had best be used. Left-sided subphrenic abscesses are best drained through an abdominal incision to the left of the ensiform cartilage.

E. K. Armstrong.

#### GASTRO-INTESTINAL TRACT

Campbell, A. M.: Benign Tumors of the Stomach. Surg., Gynec. & Obst., 1915, xx, 66.

By Surg., Gynec. & Obst.

Campbell gives a general review of the literature upon the subject of benign gastric tumors.

Consideration is given to the fact that comparatively few cases are reported, and that most of these are found at post-mortem, or are accidentally found during operations for other conditions. He includes among the more important benign growths of the stomach myomata, fibromata, lipomata, adenopapillomata, and lymphadenoma. Those of more rare occurrence are myxomata, osteomata, hydatid cysts, aneurism, and syphilitic gumma.

Attention is called to the fact that these growths occur in patients advanced in years and in many cases are associated with other pathological conditions of the stomach or cardiovascular system. It is considered improbable, however, that these associated conditions can be considered as direct etiological factors in the production of gastric

tumors of benign character.

The pathology of these growths is taken up in considerable detail and the frequent occurrence of malignant changes is emphasized, although the

progress of such changes is not rapid.

The author considers that these cases all present, at some time or other, symptoms of gastric disturbances. These symptoms may be obscure, and periods of complete recession are found, but sooner or later evidence of pyloric obstruction is observed.

Campbell urges that extra care and study be used in the diagnosis of gastric conditions, in order, if possible, to make more definite diagnosis before operation. He strongly advises conservatism in handling gastric tumors where definite evidence of

malignancy is not present.

Campbell reports a case of a woman, aged 51 years, whose early history was negative, excepting mild forms of indigestion for years. The present trouble had begun two years before; she had lost 25 pounds in weight, became weak and nervous and tired easily. She had a number of attacks of severe gastric pain, vomited considerable during attacks, and on two occasions required opiates for relief. Between attacks she was comparatively comfortable.

Physical examination was negative; there was no evidence of pyloric obstruction, and no tumor was

felt in the abdomen.

Examination of the gastric contents showed an absence of hydrochloric acid; examination of the blood gave a picture of marked secondary anæmia.

The patient was sent home with instructions as to rest, medication, and nutrition. Subsequent examination gave the same findings, with the exception that small amounts of blood were found in the stomach contents and stools. The combined findings suggested liver disease, gastric ulcer, duodenal ulcer, or malignant disease of the stomach. A probable diagnosis of papilloma of the stomach was made and operation advised.

A papillomatous growth was found in the stomach, the tumor being about the size of a pigeon's egg and situated on the posterior wall near the greater curvature, about four inches from the pylorus. The pedicle was small, about half an inch long, permitting considerable movement of the tumor. The tumor was removed, and the stump was cauterized, very little hæmorrhage resulting.

A pathological examination of the tumor showed it to be of papillomatous nature on a possible

adenocarcinomatous base.

Campbell assumes, however, that as there were no metastases present and as papillomata are usually of benign nature, that this growth may be considered benign. Nine months have elapsed since the operation with no recurrence of symptoms.

Hanck: The Prognosis and Treatment of Perforating Gastric Ulcer (Zur Prognose und Therapie des perforierten Magengeschwürs). Beitr. z. klin. Chir., 1914, xciii, 702.

By Surg., Gynec. & Obst.

The surgical treatment of gastric ulcer exclusive of the purely surgical technique depends primarily upon the certainty that a gastric ulcer and not a cancer is being dealt with. If it is certain that it is an ulcer and there is no likelihood of a later cancerous degeneration, a simple gastro-enterostomy should suffice. Since every callous ulcer presents the possibility of being a beginning cancer, or later developing into one, a much more radical procedure must be undertaken even in simple ulcers. It is not at all rare to find by microscopical examination that what was believed at operation to be an ulcer was in reality a cancer. Since Riedel and Payr have advocated excision and resection so urgently these questions have become all the more acute. Payr reported 20 per cent of cancers present in what he believed to be pure callous ulcers; Riedel found 30 per cent; Hofmeister 25 per cent; Jedlicka 26 per cent; and Küttner 43 per cent. English and American surgeons estimate the number of cancers upon an ulcer basis as high as 60 to 71 per cent, bringing microscopic proof that ulcer precedes the cancer.

From the foregoing it must be concluded that cancerous degeneration of an ulcer occurs much more frequently than was hitherto supposed. Recently, however, these figures have been considered highly exaggerated by some men, who even doubt the cancerous degeneration of the ulcer altogether. Kocher believes that when an ulcer patient later develops cancer it only shows that the ulcer was in reality a cancer primarily. Kausch and Bier take the same view. As Payr so aptly states, it is immaterial whether the ulcer becomes carcinomatous soon or late, or whether harmless as it appears it is already a cancer, one thing is certain, that in a great number of cases it is impossible to decide whether the lesion is a simple ulcer or a cancer; therefore the great majority of surgeons still advocate resection of every ulcer in spite of Kocher's renewed plea for gastro-enterostomy.

In cases of perforating ulcer gastro-enterostomy is not to be considered. Here the danger of peritonitis and hæmorrhage is so evident that later complications are rarely considered, and in the

treatment these two complications alone are usually considered.

The author reports two cases in which perforation of a gastric ulcer occurred. The ulcer was excised in one case and in the other the ulcer was sutured and covered over with omentum. Both patients

died of cancer a few months later.

It is rather surprising that in the literature no one has ever called attention to the fact that the perforating ulcer of the stomach may be a cancer primarily, and treated the case accordingly. The general opinion prevails that given a case of perforating ulcer it is unnecessary to consider the possibility of it being a carcinoma primarily nor the possibility that a cancer may later develop upon the ulcer site. From the two cases reported, however, it is evident that these possibilities exist and treatment must be planned accordingly.

L. A. JUHNKE.

Linke, R.: Acute Dilatation of the Stomach (Beitrag zur Kenntnis, Kasuistik und Therapie der akuten atonischen Magendilatation). Beitr. z. klin. Chir., 1914, xciii, 360. By Surg., Gynec. & Obst.

The author reviews in detail the subject of acute dilatation of the stomach. He holds that the occlusion of the duodenum by the arteriomesenteric root is not the primary cause of the acute dilatation. Primarily the complete compression of the duodenum between the arteriomesenteric root and the aorta which protrudes anterior to the spine is impossible. Secondly, the absence of gastric hypertrophy and of increased peristalsis speak against a primary obstruction. Furthermore, it has been proven experimentally that by influencing the nervous system an atony of the stomach can be produced. Lesions of the nervous mechanism deprive the stomach of the ability to empty itself; the failure of the gastric musculature therefore is a functional disturbance. He believes that without functional disturbance of the gastric musculature acute dilatation is impossible. Axhausen, Payer, Wilms, Kelling, and others have presented cases of complete obstruction of the duodenum without any dilatation of the stomach, although some dilatation of the duodenum proximal to the obstruction existed. He sees in the partial paresis of the musculature the primary cause of the acute dilatation.

As to the cause of the muscular paresis, the author presents some interesting points. According to Riedel, the exposure and handling of the stomach and intestine during laparotomy is one cause. Von Herff and Kelling point out that in a series of 300 inhalation narcoses nearly all of the patients showed some grade of gastric atony and dilatation. Herff attributes this to the injury of the nerve mechanism by the anæsthetic, especially chloroform, and considers it a transient chloroform poisoning. Ordinarily this paresis recedes within 12 to 24 hours. If it persists longer, then the post anæsthetic vomiting also persists and a predisposition

to acute dilatation is present.

Kuru and Arangeli attribute it to a functional disturbance of the suprarenals with lack of adrenalin, which regulates the stomach. Chavannaz and Payer mention the individual predisposition existing in some people and mention five interesting cases in which the trouble recurred frequently.

Acute dilatation, therefore, must be considered as the result of a paresis of the stomach musculature, as there is no acute dilatation with perfect function of the musculature. The arteriomesenteric obstruction of the duodenum must be considered secondary after the dilated stomach exerts pressure upon the small intestine and with it exerts traction upon the duodenum beneath the mesenteric root. The paresis of the gastric musculature may be due to central, peripheral, and reflex innervation disturbances, to mechanical as well as toxic-infectious injury to the muscle fibers, or even to a disturbance of the internal secretion governing it.

In regard to treatment the author warmly recommends the abdominal position as the only hopeful one in the treatment. The knee-elbow position or the right lateral prone likewise are of value, since in these positions the compression of the duodenum, if any exists, is removed. The evacuation of the stomach in the abdominal position is also much more easily accomplished. Gastro-enterostomy in acute dilatation of the stomach does not enter into the therapy at all, as drainage possibilities are not established in the dilated stomach, its muscles being atonic and incapable of forcing contents through the artificial opening. Of much more value and far less serious is the repeated evacuation of the stomach by means of the tube, permitting the organ to gradually regain its tone. most important, however, is the abdominal position. This, in conjunction with the stomach tube used judiciously, has recently rendered results far superior to any heretofore. The early diagnosis is all important, as P. Müller states. If we only think of the possibility, the diagnosis offers no serious difficulties. Judicious measures instituted early will cure even the severest cases. L. A. JUHNKE.

Pers, A.: Operative Treatment of Hour-Glass Stomach (Über die operative Behandlung des Sanduhrmagens). Deutsche med. Wchnschr., 1914, xl, 1612.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Hour-glass stomach is caused by one or several ulcerations, generally on the lesser curvature, occasionally on the greater curvature, which infiltrate the stomach wall circularly so that a muscular and, later, a cicatricial contraction is produced. Röntgenography is the best method of diagnosis when it is available, but if it is not available the diagnosis can be made by introducing gas or water into the stomach. When air is introduced into the stomach if there is a gurgling or whistling sound at the cardia it indicates that the air has to pass through a contraction, and if instead of one distended area there are two, separated by a furrow,

it indicates hour-glass stomach. When water is poured in and remains in the stomach, or if the fluid removed is at first clear and suddenly becomes tur-

bid, hour-glass stomach is indicated.

In operating, an anastomosis may be made between the two parts of the stomach or between the stomach and intestine. The author prefers the former because it avoids a vicious circle. He still prefers this method to any of the other palliative operations. He has used it in 7 cases with only 2 recurrences, and those only after 5 and 7 years. In recent years, however, he has come to regard resection as the method of choice; and in benign cases the mortality is no higher than with the more conservative methods. Where it cannot be used on account of age or weakness of the patient or on account of arteriosclerosis, gastro-anastomosis is performed. He thinks circular resection of the constricted part on account of the stomach is just as dangerous as Billroth's complete resection and not as effective. The pylorus if not removed may later become the seat of ulceration. A. Goss.

Beck, C.: Plastic Surgery of the Stomach; an Experimental Study. Surg., Gynec. & Obst., 1915, xx, 170. By Surg., Gynec. & Obst.

The author has studied the question of plastic operations on the stomach and reports 5 series of

operations on the dog as follows:

1. In the first series the operation consists in the formation of a tube-like gastro-enterostomy according to the principle developed by him and Alexis Carrel in 1904 in the formation of a new esophagus (now called the Jianu operation).

2. The second consists in the implantation of a portion of jejunum into a gap of stomach formed

by resection of the pylorus.

3. In this series there is implantation of a pedicled flap formed from the small intestine into the defect created by a flap resection into the small curvature of the stomach.

 The fourth series consists in flap operations according to well-known principles of plastic surgery.

5. In this series there is resection of part of the anterior wall of the stomach and covering with omentum only, without stitching the walls.

All these results were studied with fluoroscopy and skiagraphy and are now studied from a physiologic standpoint.

Johnston, J. C.: A Suggestion in Cases of Late Operation for Intestinal Obstruction. Med. Rec., 1915, lxxxvii, 21. By Surg., Gynec. & Obst.

In removing the intestinal obstruction no mechanical indication is met, but the intestine lying below the obstruction has not been prepared to withstand the resorption of fermented materials from the upper segment.

The pathology of this dilated portion permits certain changes in the wall itself, through which even bacteria may pass, or perhaps a large quantity of fluid is merely allowed to accumulate in the intestine above the obstruction; this fluid is usually a mixture of hypersecretion, inflammatory exudate, and blood. This is followed by fermentation and venous stasis and the destruction of the epithelium; then follow necrosis, ulcer, perforation, peritonitis, and more often death, if operation has been long delayed. The operation often performed is a simple enterotomy to liberate the contents of the intestine at the point of greatest distention; the wound being thus closed with a dependable intestinal suture.

Instead of closing the intestinal wound at once, the author clamps the lower segment of intestine and thoroughly irrigates the upper segment for as great a distance above the obstruction as may be easily reached, using sterile water or half-strength physiological salt solution. It is important that none of the accumulated material above shall enter the empty and thirsty intestine lying below the

obstruction.

When the operator is thoroughly satisfied that he has met the mechanical requirements of the obstruction by liberating an incarcerated bowel in hernia, or remedied the condition brought about by volvulus, intussusception, diverticulum, neoplasm, foreign body, or facal impaction, he should clamp the end of the upper segment and then remove the clamp on the lower segment. Then the half-strength salt solution should be slowly instilled into the lower segment with a view to saturating it, so that the rapid absorption of harmful products will be doubly guarded against and diluted when the fæcal stream is allowed to resume its course.

If the case presents evidence of not being suitable for complete operation at once, the intestine may be fastened to the abdominal wall and the irrigations above and below the opening continued at intervals until the condition of the upper segment warrants

the closure of the wound.

If the instillation of the fluid into the lower segment be continued until the upper segment is in a condition approaching normal, some of the cases of toxæmia that occur when the fæcal current is restored will be avoided. This treatment could follow a resection; even anastomosis done later is much better for the patient and surgeon than an explanation on the death certificate of how it happened.

EDWARD L. CORNELL.

Deaver, J. B., and Ross, G. G.: The Mortality Statistics of Two Hundred and Seventy-Six Cases of Acute Intestinal Obstruction. *Ann.* Surg., Phila., 1915, lxi, 198.

By Surg., Gynec. & Obst.

The article is an analysis of the statistics shown in 276 cases of acute intestinal obstruction during

a period of ten years.

There was a mortality of 42 per cent. DaCosta reports that the usual mortality is 60 to 70 per cent. The average time between the onset and operation in those that recovered was 2.5 days; in those dying, 4 days, 1 hour. Several noted surgeons are quoted

showing that prompt diagnosis and operation are essential to a low mortality. The cases were about equally divided between the two sexes.

In the list of etiologies strangulated hernia stands first with 156 cases, followed by post-operative

adhesions with 81.

The average mortality of the hernias was 33.5 per cent, the highest being in the umbilical and ventral varieties. This is probably due to the fact that the acute symptoms are delayed and of lesser severity.

Taxis and manipulation should not be prolonged over five minutes (Coley). The authors always operate immediately, using either general, local, or

spinal anæsthesia.

The cases of post-operative adhesions showed a mortality of 49.3 per cent, accounted for by the long lapse of time between the onset and operation, and by delayed diagnosis. Fifty-one of these 81 cases followed appendectomies, 44 of which had had drainage. Twenty-seven of the 51 cases died. The majority of these cases would have had no adhesions had they been operated upon early in the appendiceal attack, so the authors believe.

There were five cases of volvulus, with a mortality of 40 per cent, and two cases of intussuception, one

of which died.

Care should be taken not to be deceived by evacuations of the lower bowel only as a result of enemata.

In closing, the authors, reiterate and insist that it is only by prompt diagnosis and immediate operation that the mortality of acute obstruction can be reduced.

PHILLIPS M. CHASE.

Soresi, A. L.: A New Method of Lateral (Side-to-Side) Intestinal Anastomosis. Surg., Gynec. & Obst., 1915, xx, 225. By Surg., Gynec. & Obst.

The purposes of the new technique are to shorten the time of the operation to about one-half, to avoid the formation of two cul-de-sacs, and to form an anastomotic opening which cannot be occluded.

The technique is as follows:

The two stumps of the intestines are approximated with the cut edges in opposite directions. A strand of silk threaded on two seamstress' needles is used for a seroserous suture which is started midway between the two cut edges about 2 mm. from the attachment of the mesentery. Each needle accomplishes half the suture in opposite directions up to about 3 mm. from the cut edges. The needles are gently pulled so as to approximate the serous surfaces and are temporarily dropped. With scissors the two stumps of intestine are cut longitudinally and parallel to the seroserous suture approximately 3 mm. from it. Two needles are threaded with chromic catgut No. 1 and a suture is started opposite the point of the seroserous suture, which will intersect the three coats, and is continued completely around half-way with each needle until the intestine is completely closed; the ends of

the catgut are tied with two knots and cut short. The two needles which had started the seroserous suture are picked up, pulled gently apart again, and the suture completed half-way with each needle until the two meet, when the thread is tied and cut.

The author strongly recommends the use of catgut

for the through-and-through suture.

Numerous photographs illustrate the article and show each step of the procedure, and specimens demonstrate that the anastomosis is very smooth, and the natural size and shape of the lumen are preserved, because the two stumps are united in a slanting position, and that the gut is much larger at the point of the anastomosis than at any other point, so that there is ample allowance for any possible future contraction, completely preventing cicatricial occlusion. The author recommends that this procedure, like all new operations, be tried on living animals or on the cadaver before it is attempted on human beings.

Heile, B.: The Physiology of the Appendix (Zur Physiologie des Blinddarmanhanges). Beitr. z. klin. Chir., 1914, xciii, 520.

By Surg., Gynec. & Obst.

In an extensive series of animal experiments, numerous experiments with appendiceal extracts in vivo and also in vitro, and similar experiments carried out on the living human the author endeavored to determine the physiology of the appendix. Considering the structure of the appendix, analogous to that of the cæcum and colon, the physiology of the appendix is analogous to that of the cæcum, and its intimate relation to the cæcum and ileocæcal valve renders these three structures functionally related.

Heile's conclusions are:

r. The appendix contains in its walls ferments (albumin splitting trypsin and carbohydrate splitting ferments) which can be demonstrated in the lumen of the living appendix as secretions of that organ. These ferments are endocellular in nature and can be separated from their cell connection by autolysis. Furthermore, there are hormones present in the cells of the appendiceal lining capable of initiating powerful contractions of the bowel in the living animal; therefore the formation of the appendix is analogous to that of the cæcum, to which it is attached.

2. The appendix, cæcum, and ileocæcal valve together act as a physiologic unit, each acting in harmony with the others. The appendix by means of the posterior longitudinal band is in intimate relation with the ileocæcal valve, which does not consist of a mechanical valve, but of the smooth closure muscle, the muscle ileocolicus and a mucous membrane valve of ileum overhanging it. The innervation of the muscle and of the appendix is from the splanchnic nerve. In the combined action of antiperistalsis and contraction of the muscle at the ileocæcal orifice a very important factor of

bowel propulsion takes place, which may become the cause of clinical disturbances if the valves should become inefficient as a result of weakness or irritation. In case of spasm of the valvular muscle a severing of the muscle may be considered.

L. A. JUHNKE.

Dandy, W. E.: Benign Tumors of the Appendix, Especially Myxomata (Zur Kenntnis der gutartigen Appendixtumores, 52. z. klin. Chir., 1914, xcv, 1.

By Surg., Gynec. & Obst. Appendixtumoren, speziell des Myxoms).

Dandy gives a history of an operation for benign tumor of the appendix. Benign and malignant mesodermic and epithelial tumors of the appendix have frequently been observed in recent years. The majority of these tumors were cysts, and these were first thoroughly studied by Ribbert. He believes that these cysts of the appendix originated in inflammatory changes which prevented the discharge of the secretion, thus producing a cyst.

This view is not universally accepted.

Crouse has recently cited 250 cases of cysts of the appendix from the literature; they constitute about three-fourths of all tumors of the appendix. Next in frequency is carcinoma, of which Harte has quoted 150 cases. He finds carcinoma of the appendix in about one-third to one per cent of appendix operations. As there are a great number of pseudocarcinomata among these, Harte's figures are too high. Though these tumors show the histological structure of true carcinoma, they must be counted clinically among the benign tumors, for they appear at an early age and do not produce metastases nor recur after simple appendectomy.

Another form of benign tumor of the appendix is polyps. Kelly mentions only 4 cases in his book and the total number is not more than 12. Mesodermic forms are more rare than the epithelial cysts and tumors, and among them sarcoma are a little more frequent than benign connectivetissue tumors. Most of the sarcomata are of the round-cell form, but occasionally a myxosarcoma is observed. The total number of sarcomata is

about 25.

Dandy reviews only the connective-tissue tumors and those originating in the smooth muscle. He has collected 10 from the literature and adds his own. Clinically these tumors generally present the picture of appendicitis, and it is almost impossible to make a clinical diagnosis of tumor of the appendix. They are too small to be recognized by palpation through the abdominal wall, being generally from the size of a pea to that of a walnut. Only one of the cases was larger, and as it lay in a hernia it could not be demonstrated before the operation. Histologically they show the different characteristics of connective-tissue tumors - fibroma, fibromyxoma, and myxoma - or have the appearance of smooth muscle tissue. Although Dandy's case showed infiltration and proliferation,

the whole macroscopic and microscopic picture proved it to be a benign connective-tissue tumor.

A. Goss.

Ouervain, F. de: The Diagnosis of Acquired Diverticulum of the Colon and Sigmoiditis Diverticularis (Zur Diagnose der erworbenen Dickdarmdivertikel und der Sigmoiditis diverticularis). Deutsche Ztschr. f. Chir., 1914, cxxviii, Nos. 1 and 2. By Surg., Gynec. & Obst.

De Quervain gives a report on two personally operated cases. When acute or chronic disturbances arise in older patients in the region of the sigmoid one must always consider diverticulitis among the numerous conditions that may be present. especially if signs of acute peritoneal irritation develop in the left iliac fossa. A positive diagnosis of a diverticulum and inflammation may be arrived at with the aid of the rectoscope, if it is possible to introduce it high enough. Diverticulosis can, under favorable circumstances, be diagnosed by the X-ray picture. Diverticulitis, on the other hand, does not furnish such a picture, it being characterized by a slow filling of the sigmoid, also found in sigmoiditis. In diverticulosis it is important to look for evidence of a filled diverticulum after the test enema has been partly expelled. L. A. JUHNKE.

Sudeck, P.: Diverticulitis and Sigmoiditis (Zur Frage der Diverticulitis und Sigmoiditis). Beitr. z. klin. Chir., 1914, xciv, 78.

By Surg., Gynec. & Obst.

The author reports a series of tumor-like inflammatory conditions of the colon, especially of the sigmoid flexure. He states that the literature of late contains numerous reports of these cases, so that the diagnosis of a benign enlargement of the large bowel must be considered in all affections

of that organ.

In most cases the so-called Graser's diverticuli are present. These consist of hernial protrusions of mucosa and serosa, situated more frequently in the sigmoid. At times they are filled with small round enteroliths, which can be forced back into the bowel. The surroundings are commonly inflamed by their irritation. As a result of this irritation suppuration frequently takes place, or gangrene, either with perforation into the free abdominal cavity, or with a more chronic suppurative inflammation of the bowel wall and of the fatty tissue of the colon, leading to abscess-formation adhesions, and above all constriction of the bowel. An occasional favorable outcome is the perforation of such an abscess into the lumen of the bowel, followed, however, by scar contraction. In one case the author found a combination of suppurative sigmoiditis with a small cylindrical-celled epithelioma of the sigmoid, not knowing whether the carcinoma was secondary to the sigmoiditis or the cancerous ulcer the cause of the sigmoiditis.

In seven cases the sigmoid was involved, in three the ascending colon. These inflammatory

tumors are clinically very similar to the carcinomatous tumors, not only before operation but also during operation, it being at times very difficult or even impossible to distinguish between them macroscopically. The clinical picture, like carcinoma of the colon, is characterized by digestive disturbances, obstructive phenomena, and evacuations of mucous stools, and since cancer is the most probable diagnosis, this is usually made. The presence of blood in the mucous stool may also occur in sigmoiditis. The absence of occult blood, however. may be taken as a sign of sigmoiditis in the presence of a large tumor, as a large cancer will hardly undergo disintegration without blood in the stools. The regular rise in temperature, associated with mucous stools containing no blood, is of considerable significance, in addition the local pain and sensitiveness and urinary disturbance, and lastly the demonstration of the Graser diverticuli by means of the sigmoidoscope and the X-ray.

Also after the abdomen is opened confusion with cancer may arise on account of these circumscribed stenosing pseudotumors. It is important to think of the possibility of their occurrence. Suspicion should be aroused by the presence of diverticuli, adhesions to the parietal peritoneum, omentum, female genitalia, and bladder. Of decided importance is the characteristic appearance of the last infiltrated fatty tissue with a shining surface in contrast with the paler nodular appearance of the cancerous surface. It is important to make this diagnosis since the method of operation must

naturally be entirely different.

In regard to treatment the author does not favor the non-operative on account of the difficulty with which cancer can be excluded. The operation differs from that for cancer, in that in the pressure of the latter radical procedures are indicated, whereas in sigmoiditis the opposite is true. Exclusion of the diseased segment would be the ideal method, as in high lesions. In low pelvic lesions this is impossible and resection must be considered. This, however, either abdominally alone or combined with perineal or sacral attack, is relatively severe and is advised against. The formation of an anus præternaturalis is perhaps the safest, permitting local treatment by means of the sigmoidoscope until the inflammatory as well as the obstructive condition has improved. L. A. Juhnke.

#### Schulte-Tigges: Syphilitic Strictures of the Rectum (Über syphilitische Mastdarmstrikturen). Beitr. z. klin. Chir., 1914, xciv, 86. By Surg., Gynec. & Obst.

According to Rieder those strictures are to be considered as syphilitic in which at microscopical examinations meso- and endovascular hyperplasia of the veins exists, but in which the arteries are practically normal. According to Ruge syphilitic proctitis ulcerosa cannot be differentiated macroscopically from proctitis ulcerosa tuberculosa or dysenterica.

The ulceration in most cases begins a few centimeters above the anal opening and does not invade the anal ring. It is usually circular.

Esmarch claims that the ulcerations are mostly

multiple, of various sizes, from that of a lentil to that in which the entire rectal mucosa is one ulcer. Coincident with the ulceration a marked hyperplasia of the connective tissue occurs, which changes the rectum into a firm thick-walled immovable tube. The strictures result from the uneven scar formations and their contraction. Later a periproctitis may set in and invade the genital as well as the urinary

apparatus, and fistulæ may also result.

Of interest is the fact that the great majority of cases occur in women. Schuchardt's figures show 86 per cent among women to 14 per cent among men. Rieder explains this as due to the fact that the lowest hæmorrhoidal veins communicate directly with the outer veins of the vulvæ and commissure, the most frequent site of the primary, secondary, and also tertiary lesions. As a result the virus is transferred directly to the rectum by means of this vascular connection. According to Fraenkel they are due to chronic obstipation in women, mucous membrane defects being quite common in the rectum, which are sites of predilection for syphilitic ulceration.

Therapeutically bougie treatment is as inefficient as specific treatment for the underlying disease.

Sick has employed a radical method — rectum amputation after Kraske's method by the sacral route, leaving the sphincter intact. After resection he uses Hochenegg's method of drawing the upper

segment through the lower before uniting.

The author reports 17 cases with complete histories. He believes the difficulties are great owing to the dense adhesions, scar contractions in the perirectal tissues, the friability of the rectum, the friability of the blood-vessels leading to severe hæmorrhages, frequently greater than those of the carcinoma recti; but as it is the only method with which permanent results are obtainable in these severe cases, it is justifiable.

L. A. Juhnke.

## LIVER, PANCREAS, AND SPLEEN

Todd, G. M.: Duodenotomy in Common Duct-Stone. Ann. Surg., Phila., 1915, lxi, 180. By Surg., Gynec. & Obst.

The author reviews the literature on duodenotomy for common duct-stone, with especial regard to symptoms and clinical history, and adds nine cases of his own.

No typical operation of duodenotomy for stone exists, although the duodenum has frequently been opened for other causes. The operation was suggested in 1884 by Langenback. There is great confusion over the exact operation, and usually there have been three groupings: (1) After the duodenal opening, the stone is extracted, forced outward, or crushed. This is sometimes spoken of as choledochotomy, although no incision of the choledochus is made. (2) The stone is impacted

in the ampulla but easily freed by a small incision. These cases are most numerically prominent.

(3) The stone is so large that it requires a big in-

cision followed by subsequent suture.

Approximately 130 cases have been collected from the literature and it is noted that seldom do the most extensive operators choose the duodenal route, and then often only on an emergency indication. There follows a complete list of the cases reported from 1894 to 1913. The case histories of a few of the latest are cited in detail. It is noted that few are undertaken solely with the aim of removing a stone from the common duct, but more often as a sequel to a previous gall-bladder operation when the symptoms do not improve. It is also noted that the surgeons had not operated before, but that this method appealed to them as suiting the indications, was not difficult, and was practically without mortality.

The article concludes with a detailed report of nine personal cases operated upon by this method,

and the following summary:

 Duodenotomy is safe and rational and should be used more frequently.

2. It is much easier and safer than choledochotomy.

3. It gives a much lower mortality than heretofore. Phillips M. Chase.

Rollmann: Acute Pancreatitis (Pancreatitis acuta).

Deutsche Ztschr. f. Chir., 1914, cxxviii, Nos. 1 and 2.

By Surg., Gynec. & Obst.

This is a contribution of 12 cases, 5 of which were fatal. Acute pancreatitis is not more common in the obese, and occurs with equal frequency in both sexes. Cholelithiasis is often of etiological importance. Hæmorrhage, necrosis, inflammation, and often suppuration together constitute a complete clinical picture. The diagnosis is often very difficult, because in most cases pathognomonic symptoms are absent. Inflammatory resistance above the umbilicus is perhaps the only single symptom of real significance. Acute pancreatitis is generally a very severe affection; great differences in intensity and course are nevertheless evident. The treatment is surgical. It is absolutely necessary to free the pancreas, and, furthermore, to split its tense capsule in order that the swelling and tension of the gland may be relieved. Only in this way can the destroyed tissue be cast off, and the absorption of the poisonous secretion be prevented. Operation should be done as soon as possible. With the more radical procedure the results have remarkably improved. L. A. JUHNKE.

Küttner, H.: The Pancreas Complications Following Resections of the Stomach According to the Second Billroth Method (Die Pankreaskomplikationen der Magenresektion nach der zweiten Billroth'schen Methode). Beitr. z. klin. Chir., 1914, xciii, 692. By Surg., Gynec. & Obst.

The author believes that in resection of the stomach according to the second Billroth method the

duodenal stump should not be covered with pancreas to insure its impermeability. Mayo has recently advocated the procedure, as have also Willy Meyer and Faykiss. The author himself has employed the procedure for the past four years, but is again

returning to his former method.

In his clinic during the past six years 170 stomach cases have been operated upon according to this method with a total mortality of 25 per cent. Among these 170 stomach resections there were 94 in which the pancreas was not employed and only 18 per cent died; whereas of the 76 cases in which the pancreas was employed, 36 per cent died. But if these cases are analyzed it will be seen that of the 27 of the latter who died there were 5 cases of fat necrosis, 6 cases of diffuse peritonitis of uncertain origin, I case of diffuse peritonitis with suppurative deposits around the head of the pancreas, and 2 sudden deaths not accounted for by the smoothly performed resection and without any pathological findings at autopsy. While all these deaths are not attributable to the method, yet certain ones undoubtedly are, such as the acute fat necrosis cases and the peritonitis cases with serohæmorrhagic exudate within the peritoneal cavity. Furthermore, the entire absence of death due to causes in the other group confirms this view.

From his experience the author concludes that unless absolutely necessary the pancreas should not be perforated nor employed to cover the duodenal stumps in cases of gastric resections. If, however, the pancreas is involved in a carcinoma or the pancreas is necessary to cover the defect or stumps, no hesitancy should be shown in using it, as many recoveries result notwithstanding. L. A. JUHNKE.

Nobel, E., and Steinbach, R.: Splenomegaly in Childhood (Zur Klinik der Splenomegalie im Kindesalter). Ztschr. f. Kinderh., 1914, xii, 76.

By Surg., Gynec. & Obst.

Splenomegaly is indicated not only in Banti's disease, but in Hanot's cirrhosis of the liver and in hæmolytic icterus. Nobel and Steinbach describe a case of successful splenectomy for cirrhosis of the liver in a child of 8. The icterus disappeared eight days after the operation and the enlarged liver decreased markedly in size. The patient returned home so that the case was not followed any further. Eppinger has recently collected the cases in which splenectomy has been performed for hypertrophic cirrhosis of the liver, and they show that the operation is justified. A histological picture of the spleen in these cases is given, showing a marked increase in connective tissue. The changes are similar to those in Banti's disease, which shows many points of similarity to cirrhosis of the liver; the similar results of splenectomy also indicate a relationship. But of course the two conditions are not identical, there being many points of difference in their symptomatology and course, but it seems certain that the spleen plays a part in the pathogenesis of both.

They further describe two cases in which splenectomy was performed for hæmolytic icterus. This disease may be acquired in very early youth. Banti performed splenectomy in hæmolytic icterus with success; since then it has been successfully performed by numerous surgeons. It is most successful in the familial form, but Micheli has reported good results in acquired hæmolytic icterus. The two cases reported by the authors were the acquired form. The icterus disappeared soon after the operation and did not return. Anæmia was no longer perceptible, and the results of splenectomy have caused many authors to believe that the spleen plays the

chief part in the pathogenesis of hæmolytic icterus. Others have pointed out that the early improvement does not persist, so that there must be a primary change in the red cells or defective function of the bone-marrow; but Eppinger holds that a supernumerary spleen of lymph-glands may enlarge and assume the pathological function of the spleen.

Sometimes adhesions form after the operation that result in serious consequences for the patient. In the second case described they finally caused death. This must be taken into consideration in

deciding the indications for the operation.

A. Goss.

# SURGERY OF THE EXTREMITIES

### DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS. CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Barrie, G.: Cancellous Bone Lesions. Ann. Surg., By Surg., Gynec. & Obst. Phila., 1915, lxi, 129.

In a well illustrated article the author reports 20 cases of cancellous bone involvement which he classifies in three groups:

I. Metaplastic osteomalacia — systemic lesions. 2. Hæmorrhagic osteomyelitis — local lesions.

3. Osteochondrofibroma — congenital tumor.

The case reports are preceded by extensive refer-

ences to the literature.

The first group includes three cases, two in children. The blood was negative to all tests. Both children gave histories of frequent falls, in one case resulting in fracture of the femur for which osteotomy was done. No involvement of the bones

above the pelvis was noted.

The second group comprises localized inflammatory processes of the long bones resulting in areas of either solid granulation tissue or of fibrocystic or wholly cystic formation, depending on the stage of reaction present. The etiology is probably trauma causing localized destruction of bone trabeculæ with dilatation and varicosity of the vessels resulting in nutritional disturbances and further destruction from pressure necrosis. Inability to reconstruct the cancellous bone results in localized hæmorrhagic osteomyelitis in which metaplastic processes are practically absent, the area retaining the charac-The author teristics of primary granulation tissue. refers to his other reports of these cases, in which he has shown that the stimulant reaction is sufficient to prevent further bone destruction, to absorb all débris, and to form a more or less dense bony wall about the cavity which then persists. In 16 cases which the author has seen, nearly all the long bones have been involved, and one case was seen in the ilium. Ten cases have been operated upon, one having undergone amputation. The others all have healed per primum, and there have been no

recurrences. Wassermann and tuberculin tests were negative, and the X-ray showed the lesions varying in size from a coffee bean to a large goose

The third group represents a true tumor possessing the potentialities for sarcomatous degeneration. Only one case was observed, occurring in a boy of twelve, the degeneration being located in the upper end of the femur. The growth showed osteochondromatous structure without evidence of malignancy. C. E. WELLS.

# Curle, D.: Studies in the Etiology and Prevention of Rickets. Med. Council, 1915, xx, 46.

By Surg., Gynec. & Obst.

The author believes that rickets is the most important underlying cause of infant mortality, and that it is usually caused by improper diet during the first three months of life. The so-called "infant foods" usually contain too high a percentage of carbohydrates and too low a percentage of fat. If rickets is to be averted in the future, a new ideal of what constitutes a properly developed child must be created in the minds of the parents and guardians. They must be taught that the large box head, protruding abdomen, overly fat extremities, and rapid increase in weight are signs not of health but of disease. In the treatment of rickets, beyond an occasional dose of calomel, gray powder, or castoroil to clear the bowels of decomposed food and assist in reducing hyperhydremia, drugs have been found DE FOREST P. WILLARD. quite unnecessary.

Carman, R. D., and Fisher, A. O.: Multiple Congenital Osteochondromata. Ann. Surg., Phila., 1915, lxi, 142. By Surg., Gynec. & Obst. 1915, lxi, 142.

A case is reported of a man 30 years old, who presented an abscess over the left clavicle and multiple hard tumors all over the body. The history showed some of them had been present at birth, growth having been noticed up to 22 years, being most rapid from 16 to 22. The resulting deformity of the arms had necessitated his giving up hard manual labor. No fractures had occurred and there were no subjective symptoms. Tumors were found all over the skeleton, chiefly at the epiphyses, the face and skull not being involved. Examination showed a thin outer shell of hard bone surrounding a spongy trabeculated area containing a cavity lined with a distinct fibrous membrane. The authors conclude that the condition represents the result of an abnormal and misplaced growth of cartilage which has undergone cystic degeneration.

C. E. Wells.

Becker, G.: Isolated Disease of the Semilunar Bone (Die isolierte Erkrankung des Mondbeines unter besondere Berücksichtigung der Unfallbegutachtung). Beitr. z. klin. Chir., 1914, xciv, 172. By Surg., Gynec. & Obst.

In an extensive article the author discusses a clinical picture, the origin of which quite often becomes the subject of dispute in regard to workmen's compensation. It is a disease of the semilunar bone of the wrist. According to Kienböch and several others who have studied the subject rather extensively, a severe trauma is not necessary, and the patient may forget entirely that he had any injury to the wrist whatsoever. The disease manifests itself with pain and swelling of the wrist, with limitation of motion and strength. X-ray examination will reveal rarefaction of the bone, less firm structure, crumbling away of edges, and may even lead to fracture of the bone into two or more parts. It has been held that this condition was due to a primary fracture of the bone itself with later rarefaction and disintegration of certain parts. This condition, however, has been demonstrated repeatedly in cases in which no history of trauma could be elicited, or was elicited only after the suggestion had been made to the patient. It must be borne in mind that from a medicolegal point of view these latter cases are important, since if the disease is induced by some slight trauma obtained at work, the patient is entitled to liability under the compensation act. If, however, no history of trauma at work is obtainable it is hardly fair to hold the employer liable for the disease.

After extensive examination of more than 1,400 wrist-joints Kienböch believes that this disease can occur without trauma severe enough to compel the patient to quit work immediately. His explanation for it is that the patient receives a slight trauma sufficient to injure the ligament bearing the blood supply, and so depriving the bone of its proper nourishment, after which the disease develops. In this view the author concurs and reports a series of 20 cases in which points bearing on this conception of the disease are brought out. The origin of the disease can be attributed to injury at work only if a clear history and record of such injury are obtainable and recorded. An early X-ray picture after any injury is important and should be made in each case. L. A. JUHNKE.

#### FRACTURES AND DISLOCATIONS

Oehlecker, F.: The Volar Luxation of the Os Lunatum—Perilunar Dorsal Luxation of the Hand—with Fracture of the Os Triquetrum (Über die volare Luxation des Os Lunatum perilunäre Dorsalluxation der Hand—mit Abbruch vom Os triquetrum). Beitr. z. klin. Chir., 1914, xciv, 148. By Surg., Gynec. & Obst.

The two most common injuries of the wrist are the fracture of the os naviculare (navicular bone) and the volar luxation of the os lunatum (semilunar bone). They are frequently associated with fracture of the styloid processes of the radius or ulna and with fracture of the epiphysis. This is not at all unusual, as all of the mentioned injuries are due to the same or very similar injuries—a fall upon the extended dorsally flexed hand.

The isolated volar luxation of the semilunar is a typical wrist-joint injury second in frequency only to the transverse fracture of the navicular bone. Although the accident which may result in any of the above-mentioned injuries is a fall upon the extended hand, nevertheless the trauma which produces an isolated luxation of the semilunar has its peculiarity. In the first place the trauma producing a luxation of the semilunar is much more severe than that producing the typical Colles' or other radial fractures. Secondly, the dorsal flexion of the hand must be extreme, so that the radius at the moment of impact is almost vertical with the ground, whereas in a Colles' fracture the arm strikes the ground at a more acute angle. Thirdly, the hand usually is held in abduction, i.e., ulnar flexion, in which position the semilunar has moved a little toward the radial side directly in front of the oncoming radius.

In discussing volar luxation of the semilunar it is important to know exactly what is meant, as many cases have been described as such which in reality are dorsal luxations of the hand around the semilunar.

The author takes the view of Kienböck, that it would be advisable to call the volar luxation of the semilunar "perilunar dorsal luxation of the hand." The complete volar luxation of the semilunar is but a further stage of the perilunar dorsal luxation of the hand. When at the time of injury the hand is luxated dorsally around the semilunar and the head of the os capitatum is hooked behind the semilunar further force exerted will drive the semilunar toward the volar side, and the navicular bone and os triquetrum return to their normal articulation unless the injury to the ligament has been very great.

With the luxation of the semilunar numerous ligaments are stretched and torn. The dorsal ligaments and the volar ligaments are usually torn, whereas the powerful ligament between the radius and the volar surface of the semilunar is usually retained. Around this ligament the semilunar turns toward the volar surface if a perilunar dorsal luxation of the hand is converted into volar luxations of the semilunar.

In regard to the diagnosis, it may be said that the patient usually holds the hand in slight flexion. This is to be expected, as it relaxes the flexor tendons over the protruding semilunar. During examination the patient's fingers are gradually extended, and as dorsal flexion is increased the patient will complain of pain directly over the semilunar bone. Most of the patients also complain of pains, paræsthesia, etc., along the distribution of the median nerve. Active motion in the wrist is interfered with considerably, especially the volar flexion. Of the dislocated bone itself little or nothing can be felt, as it is covered with the entire mass of flexor tendons. In older cases in which massage has been given freely the bone frequently becomes palpable. The diagnosis must naturally be confirmed by an X-ray picture taken in the radio-ulnar direction. In all pictures of true isolated volar luxation there has always been a small fracture of the os triquetrum. The small corner is usually broken off the volar, proximal, radial side of the bone.

In regard to treatment, the author advises an early removal of the dislocated semilunar as the best treatment for this condition. It is much better to do this early than even after a successful refraction, running the risk of nutritional changes occurring in these bones, which later may lead to grave functional disturbances.

L. A. JUHNKE.

### SURGERY OF THE BONES, JOINTS, ETC.

Cohn, I., and Mann, G.: Bone Transplants. Lancet-Clin., 1915, cxiii, 240.

By Surg., Gynec. & Obst.

In order to refute the idea that a successful bone-graft needs an intact periosteum and bone-contact, Cohn and Mann describe the technique and results of some 15 experiments. These experiments include the transplanting of bone denuded of periosteum into muscle, into the medullary canal, and into newly-made bone defects covered and not covered with periosteum, the transplanting of periosteum denuded of bone around the carotid artery, and the observation of periosteum left *in situ*.

It was found that the isolated bone-grafts did not act as foreign bodies, were not absorbed after 60 days, and even showed a tendency to outgrowth; that the grafts placed in the medullary canal or in the bone defects showed proliferative and healing power; and that the periosteum left *in situ* did not show any bone proliferation, nor was its presence at all essential to the healing of a fracture or of a defect.

R. G. PACKARD.

Meinshausen, W.: Changes Occurring in Bone Stumps Following Amputation (Über Veränderungen an den Knochenstümpfen nach Amputationen). Beitr. z. klin. Chir., 1914, xciv, 106.

By Surg., Gynec. & Obst.

In an extensive monograph illustrated with numerous X-ray pictures the author discusses the dangers resulting in the bone stumps after amputations and gives a detailed description of speci-

The most important bone change is atrophy. It is characterized by superficial longitudinal grooves and by very fine pores extending principally from these grooves inward to the medullary cavity. It gives the surface a worm-eaten appearance. This external atrophy goes hand in hand with the inner atrophy, which consists of disintegration of the solid compact cortex into lamellated longitudinal tiny beams of bone and leads to a narrowing of the compact substance with resultant enlargement of the cavity. In the spongiosa a rarification occurs first, the number of beams being decreased by absorption. In later stages the structure of the beams also suffers, at first becoming irregular and later disappearing entirely.

The atrophy affects not only the stump but also the proximal bones of that extremity and the bones associated in action with the one amputated. For instance, in amputation of the leg the femur will atrophy as well as the bones of the stump, in amputations of the femur the corresponding side of the pelvis, and in amputations of the foot the bones of the leg. In young persons the growth of the entire extremity may be retarded.

As evidence of the atrophy the decreased weight is the most important. This is well illustrated in an appended table of different bones of stumps compared with the same sized bone of the opposite side. The difference is from one-third to one-half of the normal bone.

Another change occurring is the formation of exostoses on the cut end. This is a constant phenomenon explainable by periosteal proliferation over the end. Change in the form of the bone also occurs. This is noticeable especially in the shaft of long bones, it gradually becoming thinner. In some stumps the bone becomes pointed, in others conical.

Another interesting change occurring in some cases is the enlargement of the angle of the neck of the femur to the shaft. This is especially noticeable in older specimens. For its origin we must assume that the stump hung down free and, secondly, that it was short.

L. A. JUHNKE.

Hohmeier, F., and Magnus, G.: Implantation of Soft Parts in Joint Resection (Zur Frage der Weichteilimplantation bei Gelenkresektionen). Beitr. z. klin. Chir., 1914, xciv, 547. By Surg., Gynec. & Obst.

In 1894 Helferich first interposed a flap of muscle in an operation for mobilization of an ankylosed jaw. Since then various tissues or foreign bodies have been used to produce pseudarthroses. It has been difficult to tell from the case reports what part the implantation of soft parts played in the results. Hohmeier and Magnus therefore undertook a series of experiments on dogs to determine this question. They operated under all the aseptic precautions of a major human operation. Descriptions are given

of 7 cases in which soft parts were implanted and of o in which there was no such implantation. Careful microscopical examination of specimens was made afterward, and the authors come to the conclusion that the result is the same whether soft parts

are implanted or not.

There was no difference either in the clinical course or the anatomical picture that would justify this surgical procedure. The implanted flap adheres to the bone wound, the muscle is replaced by connective tissue, and the renewed function of the joint creates a new joint cavity. The flaps adherent to the two free edges separate and the movement of the joint keeps the cleft open. The connective tissue nearest the joint becomes differentiated into a tissue that has all the characteristics of endothelium. In the cases where simple resection was performed, the wound secretion was discharged into the old joint cavity, was infiltrated with round cells, and finally became organized into connective tissue. Here, too, the continuity of the young tissue was interrupted by the reëstablished joint function, and the inner layers next the joint surfaces were transformed into endothelium. Histologically the result is the same: the formation of fibrous joint surfaces in one case by connective transformation of the muscle, in the other by organization of the exudate and the formation of a secondary joint cavity by function, with transformation of the internal cell layers into a covering resembling endothelium.

### ORTHOPEDICS IN GENERAL

Billington, R. W.: Static Foot Disorders. J. Tenn. St. M. Ass., 1915, vii, 422.

By Surg., Gynec. & Obst.

The author discusses the diagnosis and management of the various degrees of static foot disorders. The author prefers the term "foot strain" as

covering all these disorders, weak-foot and flatfoot denoting different degrees of severity. He

considers four varieties as follows:

I. Improper use of the normal foot, caused by walking with the toes turned too far out, the correction of which, together with the use of properly made shoes, and certain simple foot exercises, is

sufficient to give relief.

2. In this variety the ligaments and muscles are weak and relaxed, the weight of the body forces the feet into the attitude of deformity, the inner ankle and scaphoid region being unduly prominent. These feet are flexible at the mediotarsal joint, and the patient can bring the foot into its normal position. There may be only slight or considerable disability. Treatment consists in teaching proper attitudes in standing and walking, exercises to develop the adductors and invertors of the foot, with a lift on the inner half of the sole to throw the weight to the outer border of the foot. In some cases an arch support or adhesive plaster stirrup dressing is necessary.

3. This is an exaggerated type of the second class. Voluntary movement in any direction of the foot is limited and painful, due to muscular spasm and sensitiveness of the tarsal ligaments and articular surfaces, pain and disability are marked, the gait is stiff, and the circulation is poor. These feet need rest for several weeks. Following this any support applied must be so constructed as to put the weight-bearing line correct, and then massage and active and passive exercises to strengthen the weak tissues will give satisfactory results.

4. Here there are organic changes in the bones and joints, the astragalus has slipped downward and inward, the os calcis is everted, and all the bones are fixed by the accommodative changes in the bones, joints, and ligaments. The foot is pronated. rigid, and the long arch is depressed. In this variety, forcible manipulation under anæsthesia to break up adhesions and to mold the foot into an exaggerated correct position is first necessary, followed by rest for several weeks. Then proper arch support with muscle training and strengthening exercises are to be followed out for some time, the arch support being discarded as soon as practicable.

Anterior metatarsalgia or Morton's disease, due to weakness of the transverse or anterior arch, is also discussed. Painful heel, an interesting complication of foot strain, due also to gonorrhœal and other infectious agents, is likewise mentioned.

Syring: Relation Between Flat-Foot and Tuberculosis (Beziehungen zwischen Plattfuss und Fusstuberkulose). Deutsche med. Wschnchr., 1914, By Surg., Gynec. & Obst.

Syring calls attention to the fact that the symptoms of flat-foot, especially when unilateral and when they have developed after trauma, should arouse a suspicion that the flat-foot is not idiopathic but is symptomatic of a beginning tuberculosis of the foot. In tuberculosis of the tarsus the subjective and objective symptoms of flat-foot are very frequently found in the early stages; this is particularly true in tuberculosis of the articulation between the astragalus and scaphoid. It is only in children that beginning tuberculosis of the foot manifests itself as talipes equinus; in adults, and more especially in young adults, it appears rather as a planus or valgus position of the foot, which only develops into talipes equinus in a late stage.

That there is great danger of confusing flat-foot as an independent disease and flat-foot as merely a symptom of early tuberculosis of the foot is shown by Garré's statistics on flat-foot; in 10 per cent of the cases of tuberculosis of the foot the diagnosis of flat-foot was made in the beginning of the disease. To make a differential diagnosis the foot should be given rest in an elevated position for two or three weeks. If it is real flat-foot, the swelling and pain will disappear within that time; persistence of these symptoms indicates tuberculosis. Moreover, frequent röntgen pictures should be taken in all possible positions of the foot. If it is tuberculosis, a tuberculous focus will probably be found, or at least the bone will show atrophy. If tuberculosis is demonstrated, it should be treated by partial resection of the articulation between the astragalus and scaphoid.

A. Goss.

Katzenstein, M.: Tanning the Ligaments in the Treatment of Flat-Foot and Other Deformities (Die Gerbung der Bänder zur Heilung des Plattfusses und anderer Knochendeformitäten). Deutsche med. Wchnschr., 1914, xl, 1520.

By Surg., Gynec. & Obst.

The author describes several cases of luxation of joints which he demonstrated to be due to abnormal flaccidity and loss of elasticity of the joint ligaments.

In one case he replaced the flaccid tibioscaphoid ligament by a flap of periosteum with complete success. He tried such a plastic operation on the ligaments in flat-foot, but decided that it was not indicated in these cases, for the tibioscaphoid ligament was not torn as in the traumatic case on which he operated, but only flaccid and overstretched, so he tried to devise a means of bringing the ligaments back to their normal condition. He does this by injecting 0.5 to 1 ccm. of 4 per cent formalin into the ligament under local anæsthesia. He corrects the position and puts the foot in a plaster cast for three or four weeks, and on taking it off finds that the ligaments have grown much firmer. He has used the method with excellent results in a number of cases and gives a photograph of a child of five with a normal foot corrected in this way. A. Goss.

# SURGERY OF THE SPINAL COLUMN AND CORD

Sharpe, N.: Spina Bifida. Ann. Surg., Phila., 1915, lxi, 151. By Surg., Gynec. & Obst.

The author declares his adherence to the pressure theory as the cause of spina bifida and gives clinical and experimental evidence in support of it. The choroid plexuses which secrete the cerebrospinal fluid begin their function in the second month of fœtal life. The closure of the neural canal takes place at the third month, the lumbar region being the latest to close; therefore increased pressure, caused by excessive secretion of fluid at this time, will seek outlet at the point not yet closed—the lumbar region. Statistics show that 86 per cent of cases are in this region.

Most embryologists accept the theory that failure of the mesoderm to close over the neural canal is the cause of the deformity. Other theories of less importance are those of amniotic adhesions, tumor formation in the central canal, and exaggerated curvature of the fœtal spine interfering with

development.

The author was able to produce artificial spina bifida in dogs and rabbits by creating excessive pressure, either by compressing the brain through cranial openings or by intradural injections after laminectomies in the lumbar region. He states that this does not prove the pressure theory but it shows that the condition may result from pressure. The commonest type, occurring in 70 to 80 per cent of all cases, is myelomeningocele in which the cord is almost fully formed but adherent to the skin, the dura extends only to the bony defect, the summit of the sac being a fusion of epithelium with the arachnoid and pia. Other forms are rachischisis in which the cord is unformed with the central canal open, sometimes accompanied by anacephalus; meningocele; syringomyelocele; anterior spina bifida, in which the sac may be in the abdomen or pelvis, usually in females; and spina bifida occulta.

Open operation is generally recognized now as the

best form of treatment. Contra-indications to operation are a bony defect too large to be repaired and absolute paraplegia. Over 90 per cent of the cases die in the first year if untreated, but many apparently hopeless cases have recovered after operation.

Six operated cases are reported: 2 meningocele with hydrocephalus; 2 myelomeningoceles with hydrocephalus; 1 myelomeningocele with almost complete paraplegia resulting in death; and 1 spina bifida occulta with paralysis. There were 2 deaths. The other cases were improved or cured by the operation.

W. A. Clark.

Taylor, J. D.: Bifida, Cranial and Spinal. J.-Lancet, 1915, xxxv, 89. By Surg., Gynec. & Obst.

In a general practice of 20 years the author encountered 4 cases of bifid cranium and spine. Hernias of the cranium are classified as: meningocele, cncephalocele, hydrencephalocele, according to the eontents of the sac. Those in the spine are classified as: spinal meningocele, myelomeningocele, and myelocystocele.

Surgery of all of the above conditions has proved unsatisfactory except in meningocele, and in this the death-rate at the lowest is 30 to 40 per cent. Complicated operations with osteoplastic flaps have been devised, but Taylor used only simple

methods.

Two cases reported were meningoceles of the occipital region, one the size of an egg, the other the size of the child's head. In both an incision was made through the scalp at the base of the tumor, which was then ligated and removed. The line of incision was whipstitched with catgut and dropped into the opening, the scalp being sewed together over it. Both children were normal mentally and otherwise at four and six years respectively. Only a very small place could be felt at the point of bony deficiency.

One case of meningocele in the lumbar region was treated as above, and at the end of two years only a slight opening could be discovered, with no protru-

There was no paralysis. sion.

Case four, an apparently perfect child, at 20 months of age, developed a tumor two inches from the spine, just above the left buttock. Physicians diagnosed it as a lipoma. On operation for removal, the true nature of the trouble was discovered when clear spinal fluid escaped. The sac was enucleated to its neck, ligated with plain No. 3 catgut, and re-The stump was whipstitched with the same material and the muscle sutured over it. Leakage occurred on the third day, the catgut being almost completely absorbed. No. 2 chromic gut was used to close the sac and muscle the second time. Leakage being again noticed in a few days, an American steel spring truss with circular back pad was placed over it for a week; when removed the wound was completely closed. This case is too recent to pass judgment upon. C. A. STONE.

#### Ryerson, E. W.: Recurrent Spondylolisthesis with Paralysis; Bone-Splint Transplantation. J. Am. M. Ass., 1915, lxiv, 24. By Surg., Gynec. & Obst.

The author reports an interesting case of recurrent spondylolisthesis associated with a spastic paraplegia of the fifth lumbar vertebra, which was treated by

a bone-graft after the method of Albee.

The patient, a female aged 15, previously healthy, fainted after an unusual strain and complained of pain in the lower spine. A week later pain extended down the back of the thighs and she was unable to walk. The knee-jerks were increased, a slight ankle-clonus developed, and the condition was considered one of spastic paraplegia. Double Buck's extension relieved the paralysis and after observation she was allowed to return home, and was cautioned against lifting and overexertion.

In a few days she stumbled and the paralysis recurred; extension again brought relief, and a plaster of Paris jacket was applied. An attack of ptomaine poisoning necessitated the removal of the jacket by the family physician in a few days and attacks of paralysis recurred about every ten days

until she was finally confined to bed.

The author examined the case ten months after she had passed from his care and found that the fifth lumbar spinous process slipped forward in backward bending, causing pain in the back and tingling to the toes. Relief was experienced on forward bending, in which position she preferred to

lie and sleep.

An Albee transplant was performed extending from the third lumbar to the third sacral. Number 12 braided silk sutures were used and the graft was covered by a layer of lumbosacral fascia and the patient put in an ordinary bed. Contrary to orders, she sat up the third week and examination three months later showed that the upper end of the graft was loose. At this time there was no evidence of paralysis, and the lumbosacral joint was firmly

fixed. The upper end of the graft was anchored. a plaster jacket applied, and the patient was apparently completely relieved. H. W. MEYERDING.

# Breton, P. le: Congenital Lateral Curvature of the Spine. Pediatrics, 1915, xxvii, 73.

By Surg., Gynec. & Obst.

It has been proven that lateral curvature of the spine may be caused by congenital defects of the bony framework. The most common abnormality is an alteration of the articular processes, especially in the lower lumbar vertebræ. The defect may involve only one process or may affect processes and bodies of a number of vertebræ. In the history of such cases curvature is usually noted earlybefore the fifth year. It progresses steadily, becoming more marked about the fifteenth year. In the cases with lumbar defect and upper compensatory curvature, the prognosis is usually good. In cases of dorsal defect, in which the curve is apt to be sharp with rigid rotation, corrective treatment is usually ineffective. DE FOREST P. WILLARD.

# Bingham, A. H.: The Surgical Treatment of Pott's Disease. N. Am. J. Homeop., 1915, xxx, 64. By Surg., Gynec. & Obst.

Bingham briefly discusses the treatment of Pott's disease. For many years horizontal fixation was used until pain was relieved. This was accomplished with casts and apparatus, after which a suitable jacket, cast, or other device was worn for years to prevent motion, which was a thing impossible to attain.

He mentions Hader's method in which the spinous processes are fixed by wiring; Lange's, in which steel plates are subcutaneously placed on each side of the vertebral column; Hibb's, in which the spinous processes are split, stripping the supraspinous ligament and periosteum from each side of the process, the spines being broken down on each other, forming a bridge of bone ultimately.

The latest and best method of treatment is that of Albee, in which absolute fixation is attained with

a rapid cure of the condition.

The operation is begun by making a curved incision on one side of the kyphos; the cartilaginous tips, supraspinous and intraspinous ligaments, are split to three-fourths of an inch, then with a mallet and chisel the spinous processes are split the same distance, each half being broken outward, leaving a wedged-shaped cavity.

A hot compress is placed over the kyphos while a similarly shaped piece of bone is removed from the tibia, this graft having marrow, bone, and peri-

The periosteum is incised in several places to allow the exit of osteogenic cells. The graft is placed in the wedge-shaped cavity and held in place by kangaroo tendon-sutures which pass through the ligaments and over the back of the splint.

The sutures should produce considerable tension, which helps to straighten the deformity. In a very short time following the operation all pains and symptoms disappear. The patient lies in the recumbent position on a fracture bed for a period of 5 to 12 weeks, after which he can walk without a support.

J. H. Shaw.

Rodman, J. S.: Surgery of the Spinal Cord. *Penn. M. J.*, 1915, xviii, 349. By Surg., Gynec. & Obst.

The author makes a plea for more interest in surgery of the spinal cord. He cites a number of pathological conditions that justify intervention. He recommends a simple laminectomy, done swiftly and with a miminum handling of the cord.

He reports two cases of tumor of the cord and describes the technique of their removal. Operating in two stages is advised for intradural tumors. He discusses rhizotomy for relief of pain and spasticity, and reports four cases in which rhizotomy was done for relief of pain and three cases in which it was done for spasticity.

James O. Wallace.

# SURGERY OF THE NERVOUS SYSTEM

Erlacher, P.: Experimental Study of Plastic Operation and Transplantation of Nerve and Muscle (Experimentelle Untersuchungen über Plastik und Transplantation von Nerv und Muskel). Arch. f. klin. Chir., 1915, cvi, 389.

By Surg., Gynec. & Obst.

In Erlacher's first series of experiments he split the biceps brachii longitudinally and separated it from the underlying tissues. The motor nerve was cut as far toward the periphery as possible, and both nerve and muscle were left in position. He found that the nerve regenerated rapidly, with an extraordinary overproduction of fibers. At the end of 16 days there was often complete restoration of the motor end-plates. A flap of muscle separated from its surrounding tissues may be sufficiently provided with nervous elements from the intact nerves of the surrounding muscle, so that it quickly undergoes degenerative changes, but later, under the influence of the regenerated nerve-fibers, there is progressive regeneration, so that at the end of six weeks it is restored anatomically and functionally. All nerves in the separated part of the muscle degenerate in a short time and are absorbed.

In a second series of experiments the musculocutaneous was cut just before its entrance into the biceps brachii, and resected as high up as possible. Then flaps with pedicles from the pectoralis major and deltoid were sutured into a cleft in the biceps. The object was to find out whether the function of the muscle whose nerve had been cut could be restored in this way. At the end of 60 days the muscle had regained its normal red color and there

was advanced regeneration, though the muscle still appeared a little weaker than normal. The regeneration was not due to restoration of the cut musculocutaneous, because the biceps of the other side, where no muscle-flaps had been transplanted, showed no regeneration. Therefore it is shown that it is possible to neurotize a paralyzed muscle by bringing it into contact with a normal muscle.

The author describes a case of paralysis of the tibialis anticus after poliomyelitis in which he used this method successfully. He thinks the procedure will not replace tendon-transplantation, but will give good results in cases where satisfactory tendon-

transplantation is impossible.

In another series of experiments, flaps were cut from the biceps brachii on each side, transplanted to the opposite side and sutured. In all the cases the transplant took without any reaction. There was first degeneration of muscle tissue, but this was followed by regeneration as the transplanted muscle became provided with nerves. After 99 days electrical tests showed that the transplanted muscle reacted normally to stimulation. This length of time is required, because first the nerves must regenerate and then the muscle.

A final series of experiments was carried out in the free transplantation of nerves. It was shown that free transplantation of nerves cannot be successfully performed, although restoration of the peripheral part of the nerve takes place after section. Preservation of the nerve sheaths is not absolutely necessary to the penetration of muscle-fibers by motor nerves.

A. Goss.

# SURGERY OF THE SKIN, FASCIA, AND APPENDAGES

Schoene, G.: Deep Growth of Epithelium After a Thiersch Transplantation (Über Tiefenwachstum des Epithels nach Thiersch verpflanzter Epidermislappchen). Beitr. z. klin. Chir., 1915, xcv, 317. By Surg., Gynec. & Obst.

Davis recently reported a case of excessive thickening of a Thiersch graft caused by scarlet red. That the thickening was not due to the scarlet red is shown by the fact that it occurred in a second case after simple dry dressing was used. Such cases probably occur frequently. References are given to three articles in addition to Davis'.

The deep growth of the epithelium has always been noted in cases in which the transplant was applied immediately over the granulation. The granulating surface is irregular and the spaces between the projections fill up with plasma, into which the epithelium proliferates. This process has no great practical significance, except that it may sometimes be desirable to produce thickening of the Thiersch grafts.

Examination of the first case after one and onehalf years showed no malignant change such as Davis thought might occur. A. Goss.

# **MISCELLANEOUS**

CLINICAL ENTITIES — TUMORS, ULCERS, ABSCESSES, ETC.

Wolfsohn, G.: Tetanus (Zur Tetanusfrage). Berl. klin. Wchnschr., 1914, xlix, 1883. By Surg., Gynec. & Obst.

Of 29 cases of tetanus treated in a military hospital 27 died. The two cases that recovered had a long incubation period and did not receive serum. In 26 cases the serum was used according to all methods recommended - subcutaneous, intramuscular, intralumbar, intravenous, perineural - all with the same lack of success. Magnesium sulphate in a 20 per cent solution given 5 times daily in 2 gr. doses did not produce any definite results. Symptomatically and perhaps therapeutically as well, chloral hydrate in 10 gr. doses deserves first mention. Even though the author does not believe in the therapeutic value of the serum his experience convinces him of its prophylactic value.

L. A. TUHNKE.

Krenter: Report on Thirty-One Cases of Tetanus Following Wounds Received in Battle and Treated by the Combined Intraspinal and Intravenous Methods of Giving Antitoxin (Bericht über 31 Tetanusfälle nach Kriegsverletzungen, einheitlich intraspinal und intravenös mit Serum behandelt). München. med. Wchnschr., By Surg., Gynec. & Obst. 1914, xlvi, 2255.

Mild cases with long incubation periods received intravenous injections only. Severe ones with a short incubation received in addition intralumbar injections, the intravenous dose being repeated every 2 hours up to 600 AE. daily. No harmful serum reactions were noted. Intralumbar injections were done under chloroform anæsthesia, usually but once a day, and in some cases repeated on 6 successive days. In some cases 1,000 to 2,400 AE. were used.

An almost immediate action of the serum on the intensity and frequency of the convulsions was noted in a large number of cases. Of 14 patients with an incubation period up to 10 days, 5 were saved; of 17 with an incubation period over 10 days, 15 were saved. This means a mortality in the first instance of 64 per cent and in the second of 12 per cent, or a general mortality of 35.5 per cent. The statistics of Termin for corresponding incubation periods are as follows: without serum 95 per cent mortality, with serum 73 per cent; for the second class without serum 70 per cent, with serum 40 per cent — a general mortality of 79 per cent without

serum and 58 per cent with serum. The results under the treatment practiced by the author are therefore much better than those formerly obtained. Two of the fatal cases had amputations before tetanus developed - another proof that amputation is of no avail. L. A. JUHNKE.

Krenter: Several Important Practical Aspects of Tetanus (Über einige praktisch wichtige Gesichtspunkte in der Tetanusfrage). München. med. Wehnschr., 1914, xl, 2045.

By Surg., Gynec. & Obst.

The author recommends the prophylactic use of large doses of serum in all cases of suspicious wounds, doses of 100 AE. rather than the former small one of 20 AE. As initial symptoms other than trismus one should look for dysphagia and local tetanus in the injured extremities. In the treatment, amputation for the removal of the local infection is useless. Local application of antitoxin is also of little avail. The best preventive measure is intravenous serum injection to counteract toxins circulating in the blood stream, supplementing this by intralumbar injections to intercept the conduction of poisons to the central nervous system, which takes place along the nerves. In this way the further distribution of toxins is interrupted, but the existing tetanic condition is not necessarily influenced. To effect this, symptomatic treatment is indicated—morphine every 2 to 3 hours, and at night 5 gr. chloral hydrate per rectum. Magnesium sulphate injections are not strongly recommended on account of the occasional respiratory disturbances attributed to them. The carbolic-acid method of Baccelli does not merit discussion. L. A. JUHNKE.

Dreyfus, L.: The Treatment of Tetanus (Die Behandlung des Tetanus). Therap. Monatsh., 1914, No. 11. By Surg., Gynec. & Obst. No. 11.

This is a comparison of the different methods of treatment with a recommendation for the flooding of the system with large doses of antitoxin, 500 AE. per day. Local treatment of the wound deserves special attention. If narcotics are used, they should be given very freely. Magnesium sulphate is best given subcutaneously and the total amount must be carefully regulated, so as not to disturb the circulation. The carbolic-acid method of Baccelli merits further investigation. When antitoxin seems to fail one should first try narcotics and carbolic injections and follow if necessary with magnesium-sulphate treatment. L. A. JUHNKE.

Alexander, K.: The Treatment of Tetanus (Zur Behandelung des Tetanus). München. med. Wchnschr., 1914, xlvi, 2260.

By Surg., Gynec. & Obst.

The following method of treatment is recommended: The first day, 100 AE. serum intravenously and in the evening 10 gr. chloral hydrate in 250 ccm. of water per rectum. Second day, 100 AE. intralumbar, in the evening 10 ccm. chloral hydrate. Third day, 100 AE. subcutaneously, in the evening 10 ccm. chloral hydrate, repeating this treatment until the convulsions cease even if the trismus does remain. These large doses of chloral hydrate never produced bad results, and although they did not control the tonic rigidity, the convulsive seizures, the pain, the high blood-pressure, and the increase in the pulse-rate promptly subsided. Two cases that had received only 5 gr. chloral hydrate died. Eight cases treated as outlined recovered. The incubation period varied from 10 to 19 days.

L. A. JUHNKE.

Angerer, A.: Treatment of Traumatic Tetanus (Zur Behandlung des Wundstarrkrampfes). München. med. Wchnschr., 1914, xlv, 2226. By Surg., Gynec. & Obst.

Kocher's magnesium sulphate treatment was unsuccessful; hence the following procedure is advised: Subcutaneous, intralumbar, or intravenous injection of 100 AE., followed every 12 to 24 hours by similar doses intravenously. Symptomatic treatment consists of large doses of chloral hydrate, 5 gr. twice daily per rectum. By this method cures were effected in cases with an incubation period of 7 to 9 days.

L. A. Juhnke.

Eunike, W. K.: Treatment of Tetanus with Magnesium Sulphate (Zur Tetanusbehandlung mit Magnesiumsulfat).

1914, xlv, 2225.

München. med. Wchnschr.,
By Surg., Gynec. & Obst.

Treatment was carried out according to Kocher, consisting in intralumbar injection of 10 ccm. of a 10 per cent solution supplementing serum therapy. In 5 severe cases there was no appreciable effect, twice there was a definite reaction, and twice in cases of lesser severity the results were surprisingly good.

L. A. JUHNKE.

Hochhaus: Experiences in the Treatment of Tetanus (Erfahrungen über die Behandlungen des Tetanus). München. med. Wchnschr., 1914, xlvi, 2253. By Surg., Gynec. & Obst.

Removal of the point of infection by amputation is useless. Of 5 cases thus treated even before the disease developed, 4 died. From observations on 60 cases the author advises the following procedures: Prophylactic treatment of the wound and I to 2 subcutaneous injections of 20 AE. serum; if tetanus has developed the intralumbar injection of 100 AE. repeated the following day and similar doses subcutaneously on several subsequent days. The symptomatic treatment consists of morphine

and subcutaneous injections of magnesium sulphate (100 ccm. of a 25 per cent solution in 24 hours or even 60 to 100 ccm. of a 40 per cent solution). The carbolic-acid method of Baccelli is advised only for the milder cases. Care in a quiet private room with freedom from external stimuli and with proper nourishment is of great importance. L. A. Juhnke.

Kuhn: Treatment of Tetanus with Luminal (Über die Behandlung des Tetanus mit Luminal). München. med. Wchnschr., 1914, xlvi, 2260. By Surg., Gynec. & Obst.

This well-known remedy, so eminently successful in the control of convulsions of epilepsy, the author has found of great value in the treatment of tetanus. The initial dose is .3 gr., followed every 4 to 5 hours by .1 gr. with an evening dose of .3 gr., making a

by .r gr. with an evening dose of .3 gr., making a daily total of about r gr. There were no signs of cardiac disturbances, this constituting an advantage of luminal over chloral hydrate. Luminal-sodium may be given subcutaneously.

L. A. Juhnke.

Behring, E. von: Indications for Serum Therapy in the Control of Tetanus (Indikationen für die serumtherapeutische Tetanusbekämpfung). Deutsche med. Wchnschr., 1914, xli, 1833.

By Surg., Gynec. & Obst.

In this study the following conclusions on the experimental investigations of serum therapy in tetanus and on the limits of its usefulness are of particular importance.

r. The tetanic symptoms are the expression of toxin absorption by the cells of the motor ganglia

in the spinal cord.

2. The toxins are conveyed to the spinal cord only along the neurolemma, absorption beginning principally through the end apparatus of the motor nerves lying within the local area of infection, and, to a lesser degree, through motor nerves that absorb toxins from the lymph and blood stream.

3. The central nervous system and the peripheral nerves do not absorb antitoxins from the blood.

From this it is clear that the antitoxin can reach and neutralize only that portion of the toxins which has remained unabsorbed at the areas of injection or toxin production and that other portion already circulating in the blood stream but not yet absorbed by the nerve-ends. This explains why the subcutaneous and intravenous injections of antitoxin act so well as a preventive, but have very little curative value. A cure can be effected only if the injection of antitoxin precedes the absorption of a fatal dose of toxin. Consequently the time interval between toxin and antitoxin injection determines the success. An intravenous dose of antitoxin, which when injected simultaneously with many lethal doses of toxin will effectively protect the experimental animal, fails to produce this effect if injected only a few minutes after the toxin. If an hour has elapsed, 40 times this amount of antitoxin is necessary, and after 5 hours 600 times the dose alone will save the animal.

For the treatment of tetanus von Behring advises surgical care of the wound with local injections of antitoxin followed by general serum therapy, according to the directions accompanying von Behring's antitoxin. The prophylactic serum injection in all cases of suspicious wounds is by far the superior method of treatment.

L. A. JUHNKE.

### SERA, VACCINES, AND FERMENTS

Goodman, C.: A Preliminary Report on a Study of the Protective Ferments of the Blood by the Abderhalden Method After the Transplantation of Organs. Ann. Surg., Phila., 1915, lxi, 149. By Surg., Gynec. & Obst.

A brief account is given of some experiments in the transplantation of different organs and the detection of a special blood ferment following the transplant. Fifteen plates are included in the article.

Carrel claims success in autotransplantation and only temporary success in homotransplantation, while Lexer is said to have overcome some of the biochemical reactions between animals by pre-

liminary treatment.

Blood-vessel transplants invariably retain their vitality, while the more complicated organs usually undergo autolytic changes and are absorbed. This may partially be due to deficient venous drainage, as the transplant for a short time remains in a state of vasomotor paralysis and is overdistended with blood. In making a transplant, caution should be taken to have the venous anastamosis end-to-end, which will give immediate venous drainage.

In the experiments, the thyroid gland was used, and in two consecutive instances of autotransplants, was successful. In the homotransplants the thy-

roid invariably was absorbed.

Out of 14 cases thus experimented on, in 8 there was demonstrated the presence of a ferment capable of digesting suprarenal tissue. The Abderhalden method of determination was used and further experiments are being made. Phillips M. Chase.

Lunckenbein: Tumor Extract Treatment and Its Results (Über Tumorextraktbehandlung und deren Ergebnisse). Beitr. z. Klin. d. Infektionskr. u. z. Immunitätsforsch., 1914, iii, No. 3.

By Surg., Gynec. & Obst.

But little of practical value has so far resulted from tumor-extract treatment. Stammler, however, obtained a complete cure of a recurring cancer of the vagina after total extirpation of the uterus by giving tumor extract intravenously. It must be stated, however, that malignant tumors have been influenced not only with specific but also with non-specific, but chemically characteristic, albuminous substances. The reason for so many failures is probably due to the method of preparation of the extract, to the method of application, dosage, selection of cases, intervals of injection, and length of treatment.

The author explains the method of action as probably due to the simultaneous injection of specific albumin bodies with the extracts and that these specific bodies stimulate the organism to an increased formation of antibodies. He further believes that specific extracts are necessary. The intravenous method of injection is to be preferred. The results are better in sarcoma than in cancer. Of 6 inoperable sarcomata 2 were cured and 2 improved. In carcinoma the results are less favorable. In 4 cases of cancer of the cesophagus the lumen became larger so that semisolid food could pass through it. Some improvement was obtained in the most variable cancers, although some failures naturally resulted. The treatment with tumor extract should be investigated further until a solution of the problem is obtained. L. A. JUHNKE.

Fleisher, M. S., and Loeb, L.: Further Investigations on the Mode of Action of Substances Inhibiting Tumor Growth and on Immunization Against These Substances. J. Exp. Med., 1915, xxi, 155.

By Surg., Gynec. & Obst.

This study is based upon a large series of experiments and is confirmatory of results obtained in previous investigations made by the authors. In their previous paper they reported that combinations of colloidal copper and hirudin and of colloidal copper and nucleoproteid were much more effective than either of these substances alone, and that these combinations not only caused an inhibition of the tumor growth but also retrogression of a considerable number of tumors. They also found that the combination of colloidal copper and hirudin was more toxic than either substance given alone.

The authors conclude that it is possible to increase markedly the effect of substances inhibiting tumor growth by using certain combinations of these substances which, when given alone, have some effect

on tumor growth.

That immunity acquired against the effect of these substances depends partly upon an active immunization of the tumor-cells themselves against the action of these substances, and this immunity is transmitted to the following generations of tumor cells.

That the immunity against the substances inhibiting tumor growth is, as far as they have in-

vestigated the problem, specific.

That their later experiments provide a more secure basis for the additional and more general conclusions which they mentioned tentatively in their previous paper.

George E. Beilby.

#### BLOOD

Gorbakowsky, D.: The Antitrypsin Content of the Blood and Leukocytosis in Laparotomy (Diagnostische Untersuchungen des Antitrypsingehaltes und der Leukocytose bei Laparotomien). Beitr. z. Geburtsh. u. Gynäk., 1914, xix, 461.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author reports examinations made on his numerous patients with reference to changes in the antitrypsin content and leukocytic count before and after laparotomy and gives his conclusions as to the value of the results in diagnosis. results show that there is a certain relation between the antitrypsin content and the increased destruction of leukocytes, but that the rise in the antitrypsin is not exclusively due to destruction of

leukocytes.

He could not confirm the assertion of other authors, who hold that if there is an antitrypsin content of more than 1.8 after operation, the prognosis is hopeless; for, according to his observations, some patients with a low antitrypsin content died, while those with a high antitrypsin content after operation lived. Neither can the determination of the antitrypsin content and the leukocytic count be utilized in differential diagnosis any more than in prognosis. We can say, at most, that if the diagnosis between a benign and malignant new-growth is doubtful, the former can probably be decided on if the antitrypsin content in the blood serum is normal or only very slightly increased. Observation shows that a high antitrypsin content connected with only a slight rise in the leukocyte count, or none at all, indicates carcinoma.

Treatment with camphorated oil in laparotomy produces an increase in the leukocytes, probably due to the irritation caused by the camphorated oil; therefore the oil should be used where there is danger of infection, because the increased number of leukocytes may prevent or overcome the infection.

F. WEBER.

### Weil, R.: Sodium Citrate in the Transfusion of Blood. J. Am. M. Ass., 1915, lxiv, 425. By Surg., Gynec. & Obst.

Blood mixed in proper proportions with a solution of sodium citrate does not clot, owing to the fact that calcium salts are no longer available for coagulation. Such blood may be kept for many days in the ice box without losing its oxygenating function. Experimentally Weil has found that guinea pigs or dogs may be practically exsanguinated and can be rapidly restored by venous transfusion of citrated blood, even if the blood is several days old.

Human patients have been treated the same way, receiving in various cases amounts ranging from 10 to 350 ccm. of citrated blood. The method is simple. Blood is aspirated from a vein and is at once well mixed with sodium citrate in a 10 per cent solution in water in the proportion of I ccm. of solution to 10 ccm. of blood. If the mixture is made in the syringe in cases in which not more than 50 ccm. are to be transfused, the transfer can be made directly from donor to donee. If larger amounts are to be used, the blood is expelled into a flask, from which the syringe is filled. In drawing the blood it is well to use a three-way stopcock which communicates with the needle, with a 10 ccm. syringe containing the citrate and with a large aspirating syringe.

The needles are introduced into the veins of the doner and donee and both are connected by a Tshaped tube with a syringe. An accessory syringe permits the injection of the citrate solution into tubing between the syringe and donor's needle. The blood is alternately aspirated and expelled. the direction of the current being controlled by two stopcocks. The apparatus is very simple, and

requires the help of only one assistant.

The figures indicate that the introduction of large amounts of 20 per cent sodium citrate solution do not lower the coagulation time in the least. In fact, 5 gm. of sodium citrate reduces the coagulation time by one-half. Weil has found it quite satisfactory to use the following: The citrated bloods of the two individuals are mixed in narrow tubes as follows, three tests being made: One ccm. of each, o. 1 ccm. of one to o.g. ccm. of the other, and vice versa. After incubation for one hour, agglutination may easily be determined. Hæmolysis is disclosed by the color of the upper layer if the cells have settled sufficiently; if not, centrifugation is required.

# Deavor, T. L.: Transfusion of Blood; Some Recent Observations. Am. J. Surg., 1915, xxix, 10. By Surg., Gynec. & Obst.

Deavor claims that too much mystery has surrounded blood transfusion, and that most of the instruments devised for its performance are entirely too complicated and of little practical value to the general surgeon. He predicts that new conditions will continually arise for its use as we come to understand the blood more fully.

Patients suffering from pernicious anæmia and the anæmia of malignancies if transfused early and repeatedly are greatly improved. He condemns its use in acute infections in plethoric individuals. He thinks that the action of the transfused blood is to increase phagocytosis and to raise the opsonic

In anæmic individuals, with a faint second heartsound and a pulse thready and irregular, transfusion should be done cautiously, if at all. In the presence of marked blood impoverishment and in great reduction of blood volume by acute hæmorrhage, he warns against the danger of hæmatolysis. This condition occurs in something like 25 per cent of cases, and for this reason he urges that the blood of both individuals be tested. Saline infusion often fails to save life; there is a short period of rally, but the heart soon fails. He points out that whole blood seems to supply this need, and in transfuison hæmorrhage is often controlled by shortening the coagulation time. He cites that by far the greatest number of transfusions are done for anæmia, whether of the pernicious variety or whether from sudden depletion, as in stillicidium of uterine fibroids, persistent epistaxis, hæmorrhage of the newborn, or frequent attacks of hæmatemesis. He recommends its use when some disease or foreign substance has altered the character of the blood, as in malignancies,

cirrhosis of the liver, illuminating-gas poisoning, pernicious anæmia, and hæmophilia. He thinks that more cases of idiopathic epilepsy should be transfused, and he recommends that they first be depleted and then transfused once or twice a year.

The methods advocated by Crile, Brewer, McGrath, and others do not provide for measuring the amount of blood transfused, and while Deavor believes that it is not necessary to be so accurate as to the amount transfused, it is best to keep within the limits of safety, for there are some cases that require only small amounts. He prefers a slender person as the donor, and because of the driving power of the heart he uses the radial artery when

using the cannula described below.

The two great disturbing features which are everywhere claiming the experimenter's attention are hæmatolysis and early coagulation of the blood. Deavor has found that the cannula need not be lined with paraffin or other protective substances, but that it is effectually lined by the blood serum, and if the air is excluded and the body temperature kept constant by means of hot sponges the cannula will remain patulous indefinitely. On the strength of these findings, he recommends the use of two small cannulas connected by a piece of rubber tubing. The entire tube or transmitter should not be over 5 inches in length and it should be free from sharp curves and angles. When ready to make the anastomosis the blood should not be exposed to the air, but the vessels and tube should be protected by hot saline sponges. As nearly as possible the caliber of the tube should correspond to the vessel. He employs the spurt method to determine the amount of blood The blood is allowed to spurt in a small graduate; if it takes 5 spurts to reach the drachm mark, each spurt will contain 12 drops, and a pulse of 80 will therefore discharge 2 oz. in one minute. This is a simple device and sufficiently accurate.

His conclusions are as follows:

1. Blood may be carried from one individual to another through unlined metallic or rubber tubing if kept at body temperature and the anastomosis done promptly.

2. The amount of blood passing over may be accurately determined if the donor's pulse-rate and the quantity discharged by a series of ventricular

contractions be known.

 The field of application should be enlarged.
 The blood after transfusion is immediately The field of application should be enlarged. taken up by the recipient and used as blood in the absence, of course, of hæmolysis.

5. The use of whole arterial blood transfusion has been so satisfactory that the complicated process of defibrination has been abandoned.

6. The method which can be applied with the

slightest disturbance is preferable.

7. Blood transfusion is not a cure, but rather a therapeutic help to other means of treatment.

8. Blood transfusion is not devoid of danger. LEWIS B. CRAWFORD.

#### POISONS

Schottmüller, H., and Barfurth, W.: The Bactericidal Action of Human Blood in Regard to Streptococci as an Indication of Their Viru-(Die Bakterizidie des Menschenblutes Streptokokken gegenüber als Gradmesser ihrer Virulenz). Beitr. z. Klin. d. Infektionskr. u. z. Immunitätsforsch., 1914, iii, Nos. 1. and 2.

By Surg., Gynec. & Obst.

The authors endeavored to determine whether human blood has a variable bactericidal action against the different streptococci and whether this bactericidal action can be taken as an indication of their virulence. It was determined that considerable variation existed. The blood possesses a powerful bactericidal action against certain strains of streptococci (streptoccus viridans and the nonhæmolytic group), to which anaërophilie is a common characteristic. On the other hand, others, like streptococcus ervsipelatos-mucosus - lactici, pneumococci, and streptococcus herbidus, are very resistant against the blood. In this variable bactericidal action we have an indication of the virulence of the bacteria without being able to state anything definite, however, regarding the individual case. We can only state which strains may induce a severe infection, but the point of infection must also be considered. The bactericidal action is greater in oxygen-containing blood than in carbon dioxide containing blood. All factors which decrease oxidation also decrease the bactericidal action of the blood. Some of the important factors are high water content of the blood and decreased number and resistance of the erythrocytes. The bactericidal action is greater on the living organism than in vitro due probably to the constant oxygen content of the blood. L. A. JUHNKE.

#### SURGICAL THERAPEUTICS

Waterhouse, H. F.: A Report on the Employment of Ether in Surgical Therapeusis. Brit. M. J., By Surg., Gynec. & Obst. 1915, i, 233.

The author has with almost startling good results used ether as an antiseptic in psoas and other tuberculous abscesses, appendiceal abscesses, compound fractures, carbuncles, tuberculous glands, tuberculous synovitis, chronic sinuses, etc. He takes up in more or less detail the use of ether in peritoneal conditions. Sixty times he has introduced ether into the peritoneal cavity as an antiseptic in 59 patients. Two died, one he thinks due to using too little ether (30 ccm.) in a pneumococcus peritonitis; the other he classifies as really a success for ether, as the peritoneal cavity was clean, the patient dying of pneumonia.

He cites 5 successful cases which he thinks largely owe their lives to ether. Two of them postoperatively showed evidence of absorption of ether, dilated pupils, pulseless, and poor respiration. Both of these had had five ounces of ether. The author does not state the time after the onset of the attack at which the operation was performed, which would greatly influence the result in these septic peritonitis cases. He considers 3 ounces the maximum dose. In septic arthritis his treatment is that outlined by Murphy, except that he injects ether instead of formalin in glycerine, the quantity not to exceed 2 drams. One case of septic arthritis of the temporomandibular joint was ingeniously treated. To obtain extension the patient was anæsthetized and a piece of India rubber one inch square and threefourths inch thick inserted between the molar teeth. The relief was so great to the patient that he insisted on keeping the rubber in place 14 days. This gave relief to the intense pain following the injection of ether. He cites 3 cases of grossly infected wounds treated with ether and says that ether has proved more satisfactory than any other antiseptic. M. S. HENDERSON.

Halpern, J.: Experiences with Coagulen (Erfahrungen mit Coagulen). Beitr. z. klin. Chir., 1915, xcv, 324. By Surg., Gynec. & Obst.

From his experience with coagulen Halpern concludes that it is a valuable hæmostatic in bleeding carcinomata and post-operative hæmorrhages. It is equal and in some cases superior to other hæmostatics. It is harmless, has no bad by-effects, and is prompt in action. It should be used in all cases in which other hæmostatics have been used, as results are often obtained by it where other methods have failed entirely. It has proven especially valuable in a number of war injuries. In several cases of amputation of fingers, toes, and legs, ligation was dispensed with entirely, the wounds simply being covered with coagulen. Halpern has had no experience in using it subcutaneously or intravenously.

A. Goss.

Hogan, J. J.: The Intravenous Use of Colloidal (Gelatin) Solutions in Shock. J. Am. M. Ass., 1915, lxiv, 721. By Surg., Gynec. & Obst.

In his observations on abnormally low blood-pressure, Hogan points out that the most serious harm done in hæmorrhage does not depend upon the great loss of red blood-cells, or in the loss of certain chemical constituents of the blood, but in the great diminution of the volume. Physiological salt solution transfusions produce only temporary effects, the solution passing off in the urine or being absorbed by the tissues as manifested by cedema.

The explanation of this is that the blood or lymph contains no free water, all the water in it being held in combination with colloids; a salt solution rapidly disappears from the vascular system for the reverse reason; in other words, because this does contain free water.

The salt in the physiological solution has a further detrimental effect by decreasing the capacity of the colloids for holding water; this is in proportion to the degree of concentration, so that after injecting a strong salt solution into the circulation, the colloids of the tissues give up water, so that an amount over that injected is excreted.

Experiments with water combined with a colloid confirmed the above reasoning; the urinary output was not increased after transfusion with this solution, and it remained in the blood-vessels. Sterile blood serum and also a gelatin solution were used. It was found possible with moderate amounts of this solution to produce evidence of overdistention of the vascular system, which did not occur with normal salt solution.

He reports a number of cases where the gelatin solution had been used for transfusion in cases of severe hæmorrhage in human beings, with apparently better results that those obtained with salt solution.

D. L. DESPARD.

#### ELECTROLOGY

Smith, E. A.: The Fluorescent Screen in Medicine and in Surgery. Wis. M. J., 1915, xiii, 354. By Surg., Gynec. & Obst.

The entire field of application of the X-ray in medical and surgical diagnosis is covered by the author within a few pages and necessarily in a condensed manner. As to fractures and dislocations he thinks that the day has passed when it could be said that they have been thoroughly examined or properly reduced without the use of the fluorescent screen. By it in the thorax may be observed infiltrated and calcified glands, abscesses, empyema, pneumothorax, tumors, the cesophagus, the trachea, foreign bodies, heart, aorta, and the position and movements of the diaphragm.

The author gives considerable attention to the gastro-intestinal tract. In examining the stomach he advises giving an opaque meal six hours previously. The fluoroscopic picture in cases of gastric ulcer varies with the variety of ulcer, whether a shallow erosion, a penetrating ulcer with a niche, or a perforating ulcer with an accessory pocket. Aside from the niche or pocket, an incisura which resists massage and belladonna is the strongest sign of ulcer. An ulcer may produce hour-glass stomach, either spasmodic or organic It usually has a short canal on the lesser curvature side, while the hourglass of carcinoma has a longer, centrally situated canal, rather irregular in outline. Carcinoma also shows persistent defects in the silhouette of the stomach. Duodenal ulcer has as signs: deformity of the bulbus, persistence of barium in the crater of the ulcer, incisura opposite the ulcer, unusual and persistent filling of the duodenum, exaggerated gastric peristalsis and hypertonicity, and tenderness over the bulb. Ileal stasis may be shown by distention of the terminal ileum with fixed, narrow, and painful points. Carcinoma of the colon may be manifested by obstruction to the barium meal or clysma, dilatation of the colon proximal to it, a palpable tumor coinciding with a filling-defect, and exaggerated antiperistalsis. ALBERT MILLER.

Mowat, H.: The Localization of Foreign Bodies by Means of the X-Rays. Brit. M. J., 1915, i, By Surg., Gynec. & Obst.

The object of the radiographer is to state with the utmost precision the exact position of a foreign body and to satisfy himself that if an extraction does not result he is in no way to blame. For this reason the method of examination chosen should be the most accurate, not the most rapid. It is often concluded that such and such a method is the best because of the ease and rapidity with which it can be executed. However quickly it may be possible for the radiographer to do his share of the work, if it is not accurate it is the worst possible method.

Considerable difficulty may confront the radiographer, and he must to a certain extent depend upon the skill of the surgeon, but if he knows that he has made no mistake he need fear no criticism. It is advisable for him, however, to be present at the operation in order to see that the patient is placed in a similar position to the one which he assumed during the X-ray examination, and, further, so that he may draw the surgeon's attention to various necessary points; for instance, if a spot has been marked on the skin under which the bullet is said to lie at a stated distance, he must see that the skin is not stretched before the incision is made. A surgeon will frequently do this without thought, placing his thumb and forefinger on either side of the spot indicated. Further, if it is shown that a foreign body lies at a certain depth below a mark, that depth is vertical and the information given will be of no value if the operator enters obliquely in order to avoid certain structures. The surgeon must, so to speak, focus the bullet in his mind's eye before the cut is made, as, once the knife has entered the surface, marking is lost.

Brief descriptions are given of the right-angle and the triangulation methods. These descriptions have not sufficient detail to serve as a guide for the beginner, nor do they afford new information for the experienced worker. DAVID R. BOWEN.

Stern, S.: Deep Röntgen Therapy and Its Application in the Treatment of Malignant Growths. Med. Rec., 1915, lxxxvii, 221.

By Surg., Gynec. & Obst.

The technique of the administration of röntgentherapy in malignancy has recently undergone very radical modifications, chief of which are:

1. The use of aluminum filters. The thickness of aluminum filters best adapted for deep-seated lesions is 3 mm.; in addition filters made up of a few layers of thick photographic paper and loofah sponge should be used to keep out the secondary rays produced in the aluminum.

2. Cross fire administration. The lesion should be attacked from as many different angles as pos-

3. Massive doses. It is advisable to divide the surface to be treated into small fields, and to give

each field at one treatment the maximum dose of toleration. This has been found to be from 15 to 20 X measured under 13 mm. of aluminum. dose should be given at three-week intervals.

4. The use of rays of a certain degree of penetration. The degree of penetration that has been found probably most advantageous in deep therapy is from 8.5 to 9 Bauer (12.75 to 135 Wehnelt).

The results accomplished in the treatment of malignant growths have been decidedly more satisfactory since the technique has been adopted.

Although it still holds good that no operable cases of deep-seated malignant growths should be treated with X-ray, except where patients refuse to be operated upon, the treatment is still reserved for inoperable cases, for recurrences, and for prophylactic treatments following operation.

The result of fourteen years' work with röntgentherapy and the treatment of hundreds of cases of deep-seated malignant growths treated in hospital and private practice force the author to the conclusion that there is at present some unrecognizable difference in apparently identical cases which determines the degree to which they will respond to X-ray treatment.

This difference is irrespective of microscopical findings, tissues involved, condition of patient, etc., although it probably has some bearing upon the degree of malignancy that we cannot recognize at present.

While we sometimes get extremely satisfactory results in the treatment of deep-seated malignant growths, we are still in no position to make definite promises at the beginning of treatment as to the probable termination of any case.

The fact that we occasionally get brilliant results in the form of cures, very often improvement of symptoms, in the alleviation of pain and prolongation of life, is sufficient to justify our demand that all cases of inoperable and recurrent malignant growths should be given the benefit of this chance

before they are given up as absolutely hopeless.

The post-operative X-ray treatment of malignancy with the object of reducing the chances of recurrences, is developing into one of the most important branches of deep röntgentherapy.

It unquestionably diminishes the percentage of post-operative recurrences. It should be used in every case following all operations for malignancy. The treatment to be efficient must be thorough. systematic, and persistent for a period of at least three years.

Treatments should be begun 10 to 14 days after operation. The first four series are given at intervals of 3 or 4 weeks, followed by treatments given every 6 weeks for the balance of the first year; the second year every 8 weeks, and the third year every 3 months.

Considering that the treatment is not accompanied by any danger whatever and that the length of time between treatments is so long that it does not entail much hardship upon the patient, it is

high time that the surgeon should be made to realize that his responsibility does not end with the operation, and that he has been derelict in his duty in not advising his patients to have the operation followed by a course of prophylactic raying. are most assuredly entitled to that chance.

Quigley, D. T.: The Relation of Radium to Surgery. gley, D. 1.: The Real Med. Herald, 1915, xxxiv, 5.

By Surg., Gynec. & Obst.

The author states that the effect of radium is due to the penetrating hard  $\beta$ - and  $\gamma$ -rays. Its effect is several hundred times more penetrating than that of the röntgen rays, but its burns heal quickly and with very little pain. Radium has been found to be the best treatment for röntgen-ray burns. röntgen-ray eczema, and röntgen-ray cancer.

The author uses radium in inoperable cases and for post-operative treatment in those which are operable. He finds that many inoperable cases have been brought into the operable class by radium treatment. He also states that it should not supplant the knife, but should be used in conjunction with it. But in some cases, such as cancer of the face, radium should be given the preference because it leaves no scar. It is a specific in keloid, lupus, and tuberculous glands of the neck. It should be used only by an expert. LEOPOLD JACHES.

Barcat: Radium Therapy in Malignant Tumors (Die Radiumtherapie maligner Tumoren). Strahlentherap., 1914, v, No. 1.

By Surg., Gynec. & Obst.

The direct application of the penetrating rays according to the method of Dominici gives promising results. The emanation action of the rays is of little significance in the surgery of today. The Dominici tubes must be introduced directly into the tumor and should average 50 cg. pure radium salt. A large number of these tubes should be introduced into the tumor at various angles and places and crossfire should so be obtained.

Barcat reports 19 cases of breast cancer. best results were obtained in cases still operable. In 5 inoperable cases the disease was apparently cured. Poor operative recurrences disappeared quickly under treatment, but metastases occurred frequently. Large doses, i.e., intensive application of 48 to 100 hours' duration, repeated every two months were more effective than frequently repeated applications of short duration. In some cases the application of the radium capsules to the surface produced good results.

In buccal mucous membrane and tongue cancers the prognosis is favorable only in superficial cases; in the majority of cases it is only a palliative measure. Cancers of the stomach and bowel are curable by radiotherapy only when the rays can be applied immediately after laparotomy. A cancer of the pylorus so treated was completely cured locally. The patient improved, cachexia disappeared, but after two years he died of liver metastases.

In cancer of the colon the results were only palliative and temporary. In two localized cancers of the bladder which were treated with radium after a cystotomy complete cure apparently resulted.

The results in œsophageal cancers are encouraging. The application must not be less than 5 to 6 hours at a session and not less than 5 to 10 cg. should be employed. A highly malignant cancer of the epiglottis was cured completely by this treatment. Six months after completion of the treatment the patient was able to deliver a speech lasting onehalf hour.

Sarcomata are exceptionally radiosensitive in some cases, especially the embryonal type. The others must be treated much more energetically. Lymphadenomata are as sensitive to radium as they are to the X-rays. In several cases which Dominici treated the lymphosarcomata disappeared, but metatstases in the mediastinum occurred in all of them within a few weeks or months. Radium is a very valuable palliative aid in the treatment of inoperable cancers. L. A. JUHNKE.

#### MILITARY SURGERY

Rübsamen: The Treatment of Stab and Gunshot Wounds of the Lungs (Zur Behandlung der Stich- und Schussverletzungen der Lunge). Beitr.

The author discusses the treatment of lung injuries as to whether the conservative or operative treatment produces the best results. He states that while in his war experience they had hoped to operate upon all cases of lung injuries, the immediate symptoms following the injury were so severe that the operation had to be postponed in most cases. To their surprise they found the patient so well the next day that the indications for operation were absent; in most cases a gradual recovery resulted. Out of 24 cases so treated only one died, all others making uninterrupted recoveries, with the exception of 3—empyema 1, removal of bullet 2—in whom surgical intervention became necessary later on. The case that died showed interesting findings at autopsy. The wound in the lung had closed spontaneously, hæmorrhage had ceased, and the blood in the pleural cavity was sterile. The bullet had lodged in the pericardium and had caused a suppurative pericarditis, to which the patient succumbed. The effusion in the pleural cavity was tapped repeatedly, but in no case was it ever infected. Temperature developed in 25 per cent of the cases, but the author believes it to have been due to absorption of blood. He highly recommends conservative treatment. L. A. JUHNKE.

Mummery, P. L.: Injuries to the Bowel from Shell and Bullet Wounds. Proc. Roy. Soc. Med., 1914, By Surg., Gynec. & Obst. viii, Surg. Sect., 8.

Injuries of this kind vary from clean bullet wounds to large septic lacerated wounds due to fragments of shell. A high velocity Mauser bullet may pass straight through the abdomen, penetrating the large and small bowel, without causing a fatal or even a serious result, providing that the following conditions are present: the bullet must be traveling at a relatively high velocity, the intestines must be more or less empty of fluid contents, and the proper first-aid treatment must be administered. In cases of this kind the best results are obtained by giving complete rest to the intestines for 48 hours after the injury, these conditions being obtained by giving morphine in full doses, withholding all food, and providing as much rest as possible.

Wounds involving the large bowel are generally complicated by other injuries, such as fractures of the pelvis, injury to the bladder, or damage to the large nerve-trunks. The nerves may be completely cut across, but are more commonly concussed, in which case the symptoms begin to pass

off within a few days.

The most difficult cases are those associated with fracture of the pelvis, and a septic wound. One case mentioned was that of an officer shot through the pelvis, the bullet entering at the symphysis and emerging close to the sciatic notch. The pelvis was extensively cracked and the wound had become septic before the patient was admitted to the hos-

The worst cases are those in which a shell wound is complicated by fæcal fistula and fracture of the pelvis. A case mentioned had a large lacerated wound on the left side above the hip joint. led down to a hole through the wing of the left ilium, through which fæces were discharged. The method recommended by the author in dealing with cases complicated by fæcal fistula is to perform a temporary transverse colotomy and to provide free drainage. After the wound in the bowel is healed the colotomy can always be got rid of by a secondary operation. I. H. SKILES.

Ritschl, A.: Orthopedic Principles in the Treatment of the Wounded (Orthopadisches in der Wundbehandlung). Med. Klin., Berl., 1915, xi, By Surg., Gynec. & Obst.

Ritschl emphasizes the importance of orthopedic treatment in military surgery. If orthopedic measures were adopted from the very first instead of being deferred for so-called after-treatment, many limbs could be saved which are now amputated and motion could be preserved in many joints which now become ankylosed. Every physician should understand massage and apply it in cases of injury to bones and joints. Active and passive movements should be begun at the earliest possible date in order to avoid atrophy of the muscles. Each time the dressings are changed passive movements should be performed. Electric treatment should be used where passive motion is impossible on account of injuries to the soft tissues.

If these treatments were borne in mind from the first, after-treatments could be very much de-

creased; they would be necessary in fewer cases and much shorter in those. Many sins of commission, but more of omission, could be avoided if all physicians were thoroughly trained in the mechanics of the human body. A. Goss.

Parry, L. A.: Notes and Comments on Some Cases of Wounded Men from the Front. Guy's Hosp. By Surg., Gynec. & Obst. Gaz., 1915, xxix, 5.

Secondary hæmorrhage is not a very common occurrence in ordinary civil practice, but it is far from uncommon following gunshot wounds and is a subject of considerable importance, for on its correct and proper management the life of the patient may depend. Secondary hæmorrhage is most common in the second and third weeks after the infliction of the injury, and is almost always due to sepsis. It follows, therefore, that it occurs more frequently after shrapnel than after rifle wounds.

The first principle of treatment is that whenever possible the hæmorrhage should be stopped by ligature of the bleeding vessel in the wound. If it is impossible to ligate the bleeding point, proximal ligature is advised. This, however, may result in such a disturbance of circulation that gangrene follows and amputation may be necessary.

Extensive wounds of soft parts are comparatively common. Usually these cases arrive at the hospital

in a very septic and sloughy condition. The treatment advocated is to irrigate with 10 per cent hydrogen peroxide and then apply gauze soaked in

chlorinated soda solution.

Perforating wounds of the chest are usually associated with injuries to the lung. Complications which result are hæmothorax, pneumothorax, and empyema. Pneumonia sometimes occurs and is then generally due to exposure rather than to the injury, the unwounded lung being the one attacked. The treatment is simple and in those cases in which there are no serious complications a policy of masterful inactivity is best. Bullets unless very superficial should be left alone in most instances. Fluids should be aspirated. I. H. SKILES.

Fauntleroy, P. C.: Gunshot and Shell Wounds. Med. Rec., 1914, lxxxvi, 1035.

By Surg., Gynec. & Obst.

The author gives a minute description of the types of ammunition used by civilized nations. Wounds produced by bullets may show explosive, penetrating, simple wounding, or contusive wounding effects, depending upon the distance at which the shot was fired. In shrapnel wounds there is apt to be more laceration and bruising of tissues with subsequent infection, because of the relatively slow velocity and ragged shape of the missile.

The treatment of gunshot wounds in the immediate rear of the firing line permits little more than a sterilization of the skin of the wound and protruding bones with tincture of iodine or a 1:500 alcoholic solution of corrosive sublimate and a sterile occlusive

dressing.

In the treatment of wounds of the abdomen, the conservative course is followed. Operation is undertaken in cases showing signs of hæmorrhage or peritonitis. Shock is combated in the usual way. Hæmorrhage calls for immediate control.

J. H. SKILES.

Rehn, L.: Military Experiences of a Consulting Surgeon (Kriegserfahrungen eines beratenden Chirurgen). Beitr. z. klin. Chir., 1915, xcvi, 116. By Surg., Gynec. & Obst.

The consulting surgeon is subject to call wherever his services are demanded. Recently objections have been raised to his being at the front on the ground that very little operating can be done there. This is true, but his duties are advisory and execu-

tive rather than operative.

The wounded are first collected at the field dressing stations, where the chief duties of the surgeon on the field are to apply first-aid dressings and cover them with sterile gauze to avoid secondary infection. Disinfection of the hands is dispensed with. In hæmorrhages the elastic bandage is applied, as there is seldom time for a ligature of the vessels. Severe arterial hæmorrhage that demands immediate ligation is comparatively rare. Sometimes the elastic bandages are applied too tight or left on too long, so that severe venous congestion occurs.

Gunshot fractures must be fixed as well as possible in any way that can be improvised. The surgeons are provided necessary equipment for emergency operations. Open pneumothorax must be treated at once and the bladder emptied by catheterization

in cases of urinary retention.

In the meantime the ambulance corps has prepared a principal dressing station in some village which is no longer under fire. This station is marked during the day by the Red Cross banner

and at night by red lanterns.

The cases are divided into mild and severe in-Morphine is administered when necessary. Operating rooms are prepared. First the patients in danger of suffocation are cared for and then hæmorrhage is attended to. The elastic bandages are removed and vessels ligated. The ends of fractures are fixed, but plaster dressings are not applied here, as it takes too much time. All sorts of splints are made use of in fractures of the femur. All the staff must work day and night at the principal dressing station after a battle. From here the wounded who can be transported are taken to the field hospital, which is established in any building that has been spared by the enemy's fire. The rooms are generally in a terrible condition; windows and doors are often gone; frequently no water, fire, or light are obtainable. A field hospital should be able to handle about 200 patients; often the author has had 800 to 1,000 to care for.

The chief of a field hospital must be a genius in organization. Here, as at the principal dressing station, only the necessary operations are undertaken. Temperatures are taken and brief case

histories prepared. Wounds are examined, bullets removed, fragments of bone removed from the brain, etc. Rubber gloves are indispensable here, as at the principal dressing station, but beds are seldom available. Sacks or bundles of straw are the best that can be obtained, so operations cannot be performed that demand careful after-treatment.

The German army now has good means of transportation. The better the means of transportation the greater the number of patients that can be transported to the base hospital. Amputation cases are sent to the base hospital unless gangrene is threatened. Patients cannot be transported who are bleeding, dying, or suffering from severe shock, as in a number of brain, thoracic, and abdominal injuries. Rehn has observed about 400 abdominal injuries with recovery in 70 per cent and 600 thoracic injuries with a very good percentage of recovery. He had about 100 cases of transverse lesions of the spinal cord, practically all ending in death. Thoracic and abdominal injuries are both treated conservatively, except in cases of open pneumothorax and intestinal prolapse. He has had excellent results in the conservative treatment of abdominal injuries with absolute fasting and abundant administration of morphine.

He was surprised at the slight symptoms in perforating wounds of the thorax. Even patients who at first had severe symptoms of collapse almost always recovered with absolute rest and administration of morphine. He has operated on about 50 cases of gunshot injury of the brain. He describes two cases in which sight was at first destroyed, but both cases recovered: one after operation and one without operation. He states that unfortunately their cases were not under observation long enough to enable them to know the final results of their operations. The cases of infected brain injuries all died, some from meningitis and some from

encephalitis.

Injuries from shrapnel and grenades demand particular care. Early incision is necessary to permit the discharge of wound secretion. These cases should be treated actively at the principal dressing station. They should be irrigated with hydrogen peroxide, Peru balsam should be poured into the wound, and loose tampons applied. All injuries by grenades and all unclean wounds demand the prophylactic use of tetanus antitoxin at the dressing station.

In the field hospital plaster casts are applied for fractures, and hæmorrhage is carefully attended to. Secondary hæmorrhage from infectious processes and from the tearing of arteries by sharp bone

fragments is observed here.

The chief task in the base hospital is the treatment of infections. Some cases of infection are found in the field hospital, especially in patients who have lain all day uncared for on the battle-field, but so much infection appears at the base hospital that there must be other causes for it. Some attribute it to defective first dressing, but

Rehn believes it is due to foreign bodies carried into the wound, such as bullets, bits of shrapnel, bits of cloth, and other matter. Erysipelas is very rare; among many thousand wounded men he has only seen two cases. Tetanus is one of the most feared wound diseases. The importance of tetanus antitoxin has already been emphasized. Gas phlegmon, the most feared of all infections, was much more frequent in the summer than now.

Rehn advises energetic treatment if the patient's general condition permits it, laying bare the suppurating focus, washing it out with hydrogen peroxide, and tamponing. He opposes early amputation, even in advanced cases. A. Goss.

### Beavis, J. H., and Souttar, H. S.: A Field Hospital in Belgium. Brit. M. J., 1915, i, 64. By Surg., Gynec. & Obst.

The experiences in this hospital have been rather unique. Well equipped, near the firing line, near the Yser, and from 5 to 8 miles at different points from the trenches, the cases have been received within the first twenty-four hours and occasionally within an hour. The men seem dazed, stupefied, and apathetic to a much greater degree than in the less strenuous fighting around Antwerp. Their clothing is filthy from the dirt in the trenches. These conditions are accounted for by the length of time in the trenches, lack of rest, and the incessant roar and din of the battle.

When to these general conditions is added the loss of blood and the actual shock which must be associated with any severe injury, it will be seen that the first efforts of the surgeon must be directed to the treatment not of the injury itself, but of the general condition of the patient. He must be got warm, his circulation must be restored, he must be saved from pain and protected from further shock. In other words, saline infusion and morphine must be used from the beginning in every serious case. Bleeding rarely requires immediate attention; unless it had been dealt with effectively on the field, the patient could not have reached the hospital. But the means adopted were probably very primitive, and with improvement in the circulation bleeding may recur. This is a very real and serious danger which must on no account be overlooked.

The authors feel they cannot urge too strongly the necessity for deferring any serious surgical procedure until all that is possible has been done for the general condition of the patient. It need not take long. Hot-water bottles, an enema of coffee and brandy, a quarter of a grain of morphine, and a pair of subcutaneous needles delivering really hot saline will carry through a serious operation a patient who half an hour before was cold and pulseless. The patients are absolutely healthy individuals, and their rate of recovery is amazing.

The infections dealt with have been low grade and of a saprophytic type; the authors feel that the severe and ugly looking wounds with the ordinary bacteria would have been incompatible with life.

A bullet far more deadly at long range than the dumdum is now being used. This is a pointed bullet which is carefully constructed, so that its center of mass is far back. On striking any tissue, soft or hard, it at once turns over and passes through backwards, the uncovered base mushrooming as it advances. The point of the bullet is under these circumstances unaltered. The course of operations has repeatedly shown specimens demonstrating the correctness of this description. The minute wound of entrance, the great internal destruction, the position of the bullet and its mushroomed base admit of no other explanation.

The injuries are divided into (1) head, (2) chest, (3) abdomen, and (4) limbs. In the first two the authors advise non-interference; in the last two they think the most radical operative procedures offer the best prospect of success.

1. In head injuries they saw no cases of cleancut perforation of the skull — laceration of the brain was terrific. They think it is best that these cases be sent through to the base hospitals, for little can be done for them at the field hospital.

2. Wounds of the chest almost always do well if left alone.

3. In abdominal wounds the authors are of the opinion that where a wound of the intestine is suspected an immediate laparotomy is imperative. At their base the close-range fighting has caused graver rifle wounds than are usually seen. They say properly equipped field hospitals should be close to the line, for unless abdominal cases can be brought in within six hours of the time of injury it would be much better to leave them in the trenches and use the transport for more practical purposes. Spinal anæsthesia has been used very satisfactorily in cases of shock. Open ether was often given to overcome the patients' nervousness and for its stimulating effect. Free use of saline and cleansing is advised and explained on the ground that a peritoneal contamination is being dealt with and not a peritonitis in the ordinary sense of the word. In the ordinary case of septic peritonitis they state they would regard this treatment as the most fatal. In the ultimate result the one essential factor is the time that has elapsed since the injury. Very few patients recover who are operated upon twelve hours after the injury.

In dealing with compound fractures two facts must be faced: (1) the wound is septic, and (2) a large section of the bone has been pulped. Obviously osteomyelitis must result and loose portions of the bone will finally come away as dead sequestra. The cases should, in the authors' opinions, be regarded as cases of osteomyelitis complicated by a fracture. If it were not for this complication, the disease could be treated on ordinary lines. The authors got rid of the complication by plating the fracture. They believed that the introduction of a little more dead material in the form of a steel plate could make very little difference, while it reduced the nursing and dressing of the case to

simplicity itself. The opinion prevails that no plate will hold in a septic wound and that at the end of a few days the whole thing will break down. Whether this observation depends on the faulty application of the plates or whether the form of sepsis with which the authors dealt had other characteristics they do not know; but on no occasion have they seen a single screw work loose from the bone. Very large and heavy plates were used for the femurs, 10 in. x 1/2 in. x 3/6 in. being perhaps the most useful, fixed by six screws at each end. By this means the two end fragments were fixed together in their proper relative positions, the intermediate portions being left in situ if they appeared to have a blood supply. No external splint of any kind was used, and the authors state that the plate held the bone with absolute security and the fracture could be ignored.

Twice a day the wound was washed out with hydrogen peroxide through tubes introduced for the purpose during the operation. In most cases the wound in a few days showed clean granulations, and only a little discharge would be washed out of the deeper regions. The patient soon learned to move the limb about for himself, and, in fact, in several cases some difficulty was encountered in persuading the patients to stay in bed. Radiographs show that in these cases callus formed in a perfectly normal manner, and that at the end of six weeks the small fragments fused together into a uniform mass sufficient to ensure the union of the bone. By that time the wound was closed completely or was reduced to a small sinus, which was washed out daily, and which was obviously closing from below.

As to the ultimate fate of the plates the authors state that it is impossible yet to speak. Their removal would in any case be an easy matter, and would be a small sacrifice to pay for the ease and comfort they provide. Any one who has attempted to nurse one of these femurs on a splint and then the same case after plating can have only one opinion on the subject.

M. S. HENDERSON.

#### RECENT ADVANCES IN MILITARY SURGERY

BY GUSTAVUS M. BLECH, M.D., CHICAGO Major, Medical Corps, Commanding Field Hospital No. 2, Illinois National Guard

THE present European war has awakened general interest in military surgery, which must be looked upon as a special branch of general surgery. As a rule it can be said that therapeutic indications in field hospitals and at frontal aid and dressing stations have been prescribed for the guidance of medical officers assigned to such stations by the proper authorities for the principal purpose of fitting into a scheme of bringing surgical relief to the greatest possible number without interfering with military conditions of importance to the fighting units. In the well-equipped hospitals at bases and in home territory, where the surgeons are not hampered by external military conditions, operative work of the character possible in civil hospitals can be practiced to the fullest extent. This must not be construed to mean that on the battlefield and in institutions on the line of communications initiative by individual surgeons is to be suppressed: on the contrary, all efforts are being made to improve the present degree of professional usefulness, provided, of course, the limitations imposed by conditions at the front are not disregarded.

#### GUNSHOT WOUNDS OF THE LUNGS

In former wars gunshot wounds of the lungs were more feared than they are to-day. Statistics (German) of the Franco-Prussian War, 1870–1876, show that over 50 per cent of penetrating wounds of the chest terminated fatally. This result was due to the size of the infantry bullets rather than to the treatment, for the modern jacketed bullets produce different wounds, and, furthermore, do not carry particles of clothing into the wound.

Shrapnel balls produce large openings and often remain lodged, owing to their lesser force. Fragments of shells produce still worse effects, often entensively injuring ribs or the wall of the thorax.

Dr. Wilhelm Hartert 1 in Prof. Perthes' Clinic in Tübingen has observed several gunshot wounds of the lungs which ran a mild course, but disputes the claim for so-called contour shots; that is to say, that the missile is deviated by a rib and passes between the bony wall and the skin around the thorax.

On the other hand, the majority of lung injuries show a serious clinical course from the very moment of receipt of injury. As a rule the patient falls, and a condition of profound shock follows, which may persist for hours. There is usually pallor, small rapid pulse, pronounced respiratory embarrassment, and slight cyanosis of the face. A torturing irritating cough, pains in the chest and back, and hæmoptysis prove lung injury. Some-

Beitr. z. klin. Chir., 1915, zcvi, Kriegschirurgische Hefte, No. 1.

times the pains are referred to the upper abdomen, similar to observations in civil life with pleurisy

(mistaken diagnosis of appendicitis).

Hæmoptysis is a peculiarly unreliable symptom. It may appear at first extensively and then to a smaller extent for weeks, though otherwise the disease runs a mild course. On the other hand it may not even appear in a grave injury, or it appears only after one or more days after the receipt of injury. Prognostically, this symptom is therefore of no value.

The factors of great significance in injuries of

the lungs are:

I. Disturbance of function of the lung due to its collapse in consequence of air or blood entering the pleural cavity.

2. Hæmorrhage, if extensive, per se.

3. Infection.

The danger of extensive pneumothorax is in direct ratio to the size of the wound of entrance. A closed pneumothorax results when the wound lips close. Bilateral open pneumothorax invariably leads to death, the uncompletely closed one may terminate in recovery.

The most dangerous condition develops when there is a valve formation of the wound which allows the entrance of air but prevents its escape.

Closed pneumothorax needs but little treatment. In threatening phenomena the aspirating syringe

will remove the danger.

Open pneumothorax is dangerous, partly because it interferes with the respiratory mechanism, partly because it leads to infection. In clean incised wounds in civil practice the rule has been to close the wound by sutures. In military practice the general rule is to treat all wounds by the "open" method, but of late attempts at suturing large wounds have been made. An impermeable or even moist dressing prevents the ingress of air without stopping its egress.

In hæmothorax, threatening pressure symptoms call for partial evacuation. But in all cases of late haemo-and pyothorax, paracentesis (about 14 days after receipt of injury) under strict asepsis must be practiced to shorten the time of resorption.

Extensive hæmorrhage may lead to exsanguination. Indeed, injuries to much lung tissue or to large vessels of the lung are the most frequent causes of death on the battlefield in all pure cases of gunshot

wounds of the lung.

In civil practice we try to control hæmorrhage by the aid of differential pressure; in the field one can only ligate the injured internal mammary or an intercostal artery.

Operative treatment in well-equipped hospitals

(Base? — G. M. B.) is feasible only in grave secondary hæmorrhage.

As a rule the danger from secondary hæmorrhage is due to sepsis. In clean cases one or two days suffice to render hæmo- and pneumothorax safe.

Infection is serious, but mere increase of temperature must not lead to such a diagnosis, as even a clean hæmothorax produces fever. Of the early empyema, as compared with the late suppuration of the hæmatoma, the former is the more serious, as it presupposes the entrance of virulent bacteria. Of all empyemas the traumatic is most feared, as the entire cavity is rapidly flooded with bacteria; e.g., streptococci, staphylococci, and saprophytic bacteria.

The only rational treatment of traumatic empyema is thoracotomy, resection of ribs, and drainage of the most dependent region. The same treat-

ment is indicated in late suppuration.

Occasionally it may be possible to utilize the original wound, if low, for drainage. Later, when the patient has improved somewhat, thoracotomy may have to be performed.

The after-treatment aims at restoring the extension of the collapsed lung by methodical blowing exercises against resistance, such as a tube im-

mersed in about 30 centimeters in water.

As already alluded to, fever, without causes demonstrable by physical examination, is not an indication for interference, especially the resorting at once to the aspirating syringe. Mere rises of temperature, per se, are meaningless. A realization of this is essential in order to prevent the patient from becoming unduly anxious.

#### GUNSHOT WOUNDS OF THE ABDOMEN

Soldiers suffering from penetrating (perforating) wounds of the abdomen by small caliber missiles, including shrapnel balls (average diameter of half an inch), must be treated conservatively at frontal aid stations. Rest, abstinence from food and drink, the combating of shock and pain, and the protection of the wounds by sterile dressings constitute the sole measures available.

When these patients reach the field hospital, usually many hours after receipt of injury, they are either in good condition or they suffer from diffuse peritonitis. In the former case operative intervention is uncalled for; in the latter, operative therapy comes too late. This represents the official teaching based on many experiences in recent

Lieutenant-Colonel Jacob Frank, Surgeon-General Illinois National Guard,1,2 strongly advocates the early establishment of drainage of the abdominal cavity, provided the wounded fall into the hands of trained surgeons within the first few hours after receipt of injury. In view of the fact that the meager equipment furnished medical officers and

<sup>1</sup> Mil. Surg., Chicago, 1914, Apr.

their trained subordinates for service at the front furnishes no means for the proper practice of drainage, Frank urges that there be no hesitation in utilizing one end of the first-aid packet (a long sterile bandage in the center of which is fastened a small square dressing of gauze), which should be pushed through the wound into the abdominal cavity by any available narrow, blunt appliance. When the wound is too small for such a maneuver it should be enlarged by dilatation with an artery forceps or by sharp dissection.

Frank contends that while the official method protects the external wounds, endogenic infection cannot be prevented thereby. The theory that in perforation of the hollow viscera the mucous membrane becomes everted, and in that manner acts as a plug and prevents the escape of the intestinal or stomach contents into the peritoneal cavity, is denied by him, for leakage certainly is the rule. By draining the visceral contents and the bacteria from the abdominal cavity the peritoneum is given a chance at resistance. Frank further claims for his method that the transport to the field hospital, which is so much dreaded, is rendered less risky because the visceral contents and gases are not dammed up in the visceral and peritoneal cavities.

Frank's contributions on this subject have aroused both adverse criticism and praise by several European army surgeons. The main contention that all manipulations with unsterilized appliances are apt to increase infection has been denied by him as important because the danger from endogenic in-

fection is greater than that from without.

In an extensive monograph, very recently from the press, Professor Wieting Pasha<sup>3</sup> of Constantinople also denies that the everted mucosa in a perforation of the intestine acts as a plug. On the contrary, he is convinced that such an eversion proves a veritable stoma for the thin intestinal contents.

Professor Payr of the University of Leipsic 4 advocates a small incision above the symphysis pubis under local analgesia, large enough to allow the introduction of a rubber tube of medium size.

This operation must be performed within fortyeight hours after the receipt of injury, provided the patient is in good condition. Treatment is continued in the sitting or lateral posture. By this procedure the blood effusion which is in the small pelvis and which becomes infected and suppurative, leading later to general peritonitis, is rendered innocuous.

If the patient comes under observation after forty-eight hours Douglas' pouch is to be examined and incised if protrusion, tenesmus, and difficulty in urination are present. The entire procedure is done per rectum. If there is a circumscribed protrusion the sphincter is stretched to a considerable extent, the mucous membrane over the swelling is

<sup>&</sup>lt;sup>2</sup> Deutsche mil.-ärztl. Ztschr., Berl., 1914, May 5.

<sup>&</sup>lt;sup>3</sup> Kriegsärtliche Erfahrungen. Vollbrecht and Wieting Pasha. Berlin: Fischer, 1915

<sup>4</sup> München. med. Wchnschr, 1914, No. 2, Feldärztliche Beilage.

caught with two volsellum forceps, an aspirating syringe is introduced, and when decomposed blood, pus, or a turbid exudate is withdrawn, incision is made through the rectal wall with a knife or a Pacquelin cautery, and a rubber drain is introduced.

If there is no circumscribed swelling of the pouch, but there are evidences of pelvic peritonitis, access is to be gained parasacrally. The coccyx is enucleated, the retrorectal fascia is divided longitudinally, the rectum exposed and pulled down, and the anterior peritoneal fold incised laterally. A drain is introduced and the open wound treated by loose tamponade. Payr proposes this method on the strength of favorable experience in his civil practice

#### TREATMENT OF WOUNDS AT THE FRONT

Professor Tuffier, the well-known French surgeon, contributes his impressions from a study of con-

ditions near the firing line.

To begin with, he believes that the so-called antiseptic treatment of gunshot wounds has demonstrated its superiority over the aseptic method. He asserts that primary conservative surgery of the limbs will make amputation unnecessary, but admits that there is always danger lurking in gangrene, and that amputation may finally be necessary. Immediate extraction of shell splinters when it can be done without great difficulty is indicated. In the matter of immobilization of the extremities he believes the double wood-splints, padded in the ordinary way, as used by the Germans, is the best and most effective method. Tuffier had hoped to go to the front and attempt to solve the problem of laparotomy for perforating abdominal wounds at frontal stations, but found septic surroundings and the inability to work without haste to be anatagonistic to abdominal section - a fact, by the way, which has been established since the Spanish-American and Boer campaigns. When, as often happens, percussion shows the presence of large intra-abdominal effusion, he says the best that can be done is to make a suprapubic incision under local anæsthesia for the purpose of drainage (Murphy). Maintaining the patient in a sitting position and withholding all food until the patient can reach a hospital is the sum total of frontal treatment. Of six patients thus removed five were operated on. Tuffier says only one laparotomy was still alive when he left.

Observation of fifty cases of tetanus has convinced him that it is practically impossible to so dress the wounds as to absorb and neutralize the tetanus bacilli. Early injection of antitetanic serum in suspected cases alone is of value.

In all other infected wounds associated with fracture or implicating joints, drainage must be carried out judiciously together with the extraction of the bullet, particles of cloth, and loose bone splinters.

The most serious infection is gangrenous em-

1 Brit. J. Surg., 1915, ii.

physema. Tuffier does not believe that incisions with the cautery, deep injections of peroxide of hydrogen, or even amputation will avail, at least that has been his experience in five cases. Removal of foreign bodies is the best preventive treatment and will reduce the prevalence of this infection.

He has seen six cases of secondary hæmorrhage after fracture of the clavicle, humerus, femur, and tibia. In only one case did he succeed in tying the artery in the wound, because it was aseptic; in all others, ligatures had to be applied above the wounds. All patients recovered.

# THE DIAGNOSIS OF INJURIES BY DUMDUM BULLETS

Professor P. von Bruns <sup>2</sup> discusses the history of these missiles, their unlawful use, and, most important, how to establish their utilization from the character of the wounds. The dumdum problem is a caliber problem. All efforts in the past have been directed toward the reduction of the caliber for the purpose of increasing the ballistic properties and of reducing the weight of the cartridges.

In the Franco-Prussian War in 1870 the Germans used missiles of a caliber of 15 mm., while the French used the Chassepot gun with missiles of only 11 mm. caliber. The latter produced comparatively small wounds of entrance and exit, but occasionally injuries were observed with small wounds of entrance which showed a funnel shape in the interior, irregular torn wound channels, and gaping wounds of exit.

This apparent explosive effect could then be ascribed only to explosive missiles, the use of which had been pronounced unlawful by the St. Petersburg Convention in 1868. This experience led to bitter recriminations and diplomatic steps with the

neutral powers.

After the war, experiments proved that this explosive effect could be obtained with simple lead bullets provided they struck with great velocity. The soft lead becomes deformed or bursts in the body and develops an explosive effect in the tissues in direct ratio to the liquid contents. This is known as the hydrodynamic effect.

As the Chassepot bullet at close ranges had a great speed the explosive effect was easily explained and — the author admits — the accusations against

the French had no justification.

In 1886 the reduction of the caliber of the infantry missiles began (up to 6.5 mm.), and it was found that the terrific speed made them inapplicable even in the barrel of the gun, the rifling tearing to pieces the bullet and filling the grooves with lead. This necessitated the covering of the lead "kernel" with a jacket of hard metal such as steel, copper, or nickel.

This innovation forced upon gunnery by technology resulted in the production of more benign wounds.

<sup>&</sup>lt;sup>2</sup> Beitr. z. klin. Chir., 1915, xcvi, Kriegschirurgische Hefte, No. 1.

The only army which utilized the partially jacketed bullets such as are used by sportsmen in hunting big game was the English army in its Indian frontier campaigns. At first the soldiers filed off the top of the mantle, but later the English government munition factory in Dumdum, near Calcutta, produced them. The purpose was to better disable the enemy. The author bases his statement on the reports of the English surgeons Davis and Hamilton, in the British Medical Journal toward the end of 1897.

Von Bruns' experiments show that the soft points of the bullets mushroom and produce the most terrible wounds, explosive in character. The principal question that presents itself is whether one can recognize from the character of a wound that it

has been produced by a dumdum bullet.

In observing individual wounds it must always be borne in mind that a wound of unusual character may be produced by jacketed bullets at close range, or after the missile has ricochetted, or the bullet has been deviated into a cross position or, finally, that

the wound is due to a shell splinter.

As a result of his extensive experiments von Bruns calls attention to the characteristic opening of the skin in the wound of exit. The wound of exit is strikingly large, 3 to 10 cm. in wounds of the soft parts, and up to more than 20 cm. long in bone wounds. The wound of exit occasionally presents a simple gaping tear-wound with sharp margins, but usually the skin is torn in two to six long parallel tears. If these longitudinal strips are severed transversely and partially thrown outward, large cutaneous defects are developed from which protrude rags of muscles and tendons.

Von Bruns has seen these parallel longitudinal cutaneous tears result only from soft-nosed and hollow missiles up to a distance of 600 meters. On the other hand, large wounds of exit are produced also by full-jacketed bullets in wounds of the diaphyses of the long bones at close range, but these effects are not observed at ranges over 600

meters.

In the present war, fighting is going on at close range and the reports show that the near effects of infantry fire closely resemble injuries by artillery; one should, therefore, be extremely guarded in diagnosing dumdum bullets merely from the large wounds of exit. The longitudinal parallel tears of the wound of exit, however, are a reliable char-

acteristic of explosive wounds.

Incidentally, von Bruns takes up the question whether the new aluminum-lead bullets utilized by the English in the present war, since the battles around Lille, are not dumdum missiles pure and simple. The missile referred to is a pointed bullet with a very thin jacket which, however, does not envelop a simple lead "kernel," but at the top an aluminum conical point 10 millimeters long.

The construction of this missile is such that the heavy lead "kernel" at the moment of contact presses against the aluminum "kernel," tearing

the mantel, the lead "kernel" becomes deformed, and frightful wounds result. Externally, of course, the missile appears to be jacketed and humane, but the presence of the aluminum "kernel" in the wound makes the diagnosis one of absolute certainty.

From observations of ten wounded soldiers, von Bruns scathingly condemns these missiles as cunningly cruel, and illegal according to the Hague

Declaration.

#### NAVAL WOUNDS

Charles A. Pannett of London 1 emphasizes the fact that bullet wounds in the ordinary sense are unknown in sea battles, all wounds being due to bursting shells or to fragments from the ship produced by impact with shells. These wounds are multiple and very often extensive in character.

Few of the wounds become infected, which Pannett believes may be due to washing with sea water. Suture of the wound is possible with a good chance for primary union. The good physique of the sailor makes him a good surgical risk, as reaction from shock is frequently observed. Infection on land is more frequent, because the soldiers lie in dirty surroundings, seldom receive prompt first-aid, and are often transported long distances for the first surgical aid to an improvised dressing station in some unhygienic building. As all shell wounds are of the lacerated, contused type, surgery is necessarily of a mutilating character.

In modern sea battles calamities occur in which only those able to jump and swim in the sea can save themselves. Those suffering from wounds and contusions, or stunned by blows, either drown or

freeze in the cold water.

Most wounds seen by Pannett were of an extremely mutilating character, extremities being blown off, bones splintered, eyes torn out, jaws torn across exposing the oral cavity, eyes gouged out,

Among the survivors he saw no serious chest wounds. A small fragment may pass through the chest, traversing the lung, causing hæmoptysis for a few days, and still recovery result under expectant treatment, provided the wound does not become infected.

First-aid is rendered on battleships, but no surgeons are sent with English destroyers and torpedo boats. This Pannett decries as a serious blunder and suggests that student-dressers be sent on board each small craft to prevent infection of the wounds.

Every man should receive a hypodermic injection of a large dose of morphine before removal to the

hospital ship.

All tourniquets which have been applied should be let alone at first until opportunity presents itself for systematic examination and treatment. Operative treatment must be postponed until shock and anæmia from hæmorrhage are controlled. Often hours elapse before there is reaction from shock. Pannett used antiseptic treatment - 2.5

<sup>&</sup>lt;sup>1</sup> Brit. J. Surg., 1915, ii.

per cent alcoholic iodine and carbolic 1:60. Retained fragments seen by röntgenography should be excised if not too deep seated, as then there is

danger of spreading infection.

It is a good plan not to condemn extensively injured limbs to amputation, as many which had been declared hopeless have recovered. It is better to err on the side of conservatism.

#### HOSPITAL SHIPS

Pannett 1 believes that the advent of the waterplane and submarine is bound to revolutionize the care of the wounded on water. He takes issue with the plan of Surgeon-General Rixey of the U.S. Navy 2 to have hospital ships accompany fleets. Hospital ships cannot be built to travel fast enough to follow fleets and at the same time maintain the needed equilibrium in turbulent waters necessary to do surgical work. Such ships could not make ports at low tide; yet this is important, as ships must seek shelter and hospital ships must evacuate their wounded to port hospitals.

Hospital ships should remain at some distance from the fleet engaged in battle, and men-of-war which desire to transfer their wounded must send them to the "floating hospital" by destroyers, in

this manner preserving fighting efficiency.

In the present war the hospital ships in spite of almost insuperable difficulties have proved very useful,—far superior, indeed, to the improvised hospitals on shore because of the presence aboard of sterilizing and X-ray equipment.

Ordinary ships can, of course, be transformed into hospital ships, but it is better to build them as such. Such a ship should not exceed 2,000 tons and should draw not more than 16 feet of water. It will ac-

commodate 100 beds.

Pannett attributed his ability to do good surgical work on the "Liberty" to the fact that the operating room was placed in the middle of the ship, with the floor five feet below the water-line, thus occupying a position where the boat's movement is least felt. Proper ventilation is essential for after-treatment and all wards should be on deck, at least as many as

Good light and heat, and an arrangement to suspend or maintain in a fixed position all cots in tiers if need be - in wards below deck, with an adequate supply of lavatories, bathrooms, and sinkrooms, and easy accessibility to all wards, are the

main demands for good hospital ships.

#### THE TREATMENT OF ACUTE EMPHYSEMATOUS GANGRENE

Lieutenant-Colonel C. B. Lawson, of the Royal Army Medical Corps, and H. Beckwith Whitehouse,3 in a preliminary communication from Rouen, point

1 Brit. J. Surg., 1915, ii. 2 Keen's Surgery, vol. iv. to the great incidence of tetanus and acute emphysematous gangrene among the wounded. They have adopted a new method of treatment which has shown marked success in their hands. In the months of September and October they had 17 cases of gangrene. Of these, 3 were traumatic pure and simple, resulting in interference with the blood supply. The remaining 14 represented the type variously designated "infective gangrene," "hospital gangrene," or "emphysematous gangrene." Of these, 8 involved the upper, 6 the lower extremity. The first three cases were treated in the usual manner and proved fatal. In one case, amputation did not relieve the shock and general infection, in the other two the process had already extended to the abdominal wall and amputation was out of the question. Applications of peroxide of hydrogen did not prove of any value whatever.

The first patient of the new series had sustained his injury three days before reaching the hospital. He was in extremis. He showed a large lacerated wound on the posterior aspect of the right knee, extending upward into the muscles of the thigh. The wound was extremely foul, the surrounding tissues ædematous, devitalized, and emphysematous, with typical blebs on the skin. A long unencapsulated anaërobic bacillus was cultivated from the fluid of the wound. Amputation was done through the upper third of the thigh. During operation it became apparent that the infection had already spread so high that amputation in healthy tissue was impossible. After 24 hours the flap showed infection. Peroxide of hydrogen under pressure was infiltrated into the tissues above the infective process. For this purpose small incisions were made, through which the drug was forced into the subcutaneous and subfacial planes by means of a Higginson syringe. The rapid evolution of gas distended the stump to an enormous size. At once the process was arrested, the infected portion sloughed away, and the surrounding skin assumed a normal tint. The patient recovered, and returned to England convalescent. In other cases similar treatment was given without amoutation.

The following conclusions were reached:

 Acute infective gangrene due to bacillus aërogenes capsulatus or bacillus œdematis maligni, in the case of the extremities, is at first a purely local process, spreading by direct continuity in the subcutaneous tissues. The muscles and deeper tissues are only involved in the immediate neighborhood of the wound. When gangrene of the whole limb exists it is due to severe trauma, especially to the main vessels. Acute infective gangrene and traumatic gangrene may be superimposed.

2. Amputation of a limb for acute emphysematous gangrene is unnecessary, unless the whole of the tissues are involved over a very extensive area. It is sufficient to remove only dead and dying tissues, and amputation high above the infected area is contra-indicated and may prove fatal from

shock.

<sup>3</sup> Brit. J. Surg., 1915, ii.

3. Infiltration of the healthy subcutaneous tissues with oxygen above the line of spreading gangrene is sufficient to check the advance of the infection, and in the majority of cases the limb may be saved.

4. The most convenient means of applying nascent oxygen to the tissues is by the injection of warm

neutral hydrogen peroxide.

5. Since the operation is not unattended by risk, care must be taken to obviate shock and trauma to the yeins.

# THE REMOVAL OF BULLETS BY THE ELECTRO-

Surgeon-General Prof. Dr. von Hofmeister of Stuttgart <sup>1</sup> refers to the great demand on the part of patients to have bullets removed in the erroneous belief that once the missile has left the body all danger from the injury is past — a notion from which even many medical men have not freed themselves.

Recently a proposition has been made to utilize the giant electro-magnets for that purpose, in the same manner as the ophthalmologists use the appliance to remove a metal splinter from the eye.

About twelve years ago von Hofmeister extracted with ease a small iron rod from the bladder of a young man per urethram by means of Hirschberg's hand-magnet, after introducing an attachment of soft iron, shaped like a catheter, into the urethra. Since then he has undertaken many experiments on freshly amputated extremities with negative results.

Even a perfectly new needle in the muscular tissue offers, through muscular adhesion, such a tremendous resistance that the 15-kg. pulling power of the electro-magnet applied closely and in the right direction does not suffice for extraction. It is absolutely impossible to pull out a small piece of iron from below a muscular layer, even if the latter be no thicker than paper.

Clinically, von Hofmeister had only one favorable experience with the magnet. It concerned a case of a lodged part of a needle in the vola manus. The magnet raised the muscle layer over it with lightning-like rapidity and the needle was then easily

excised.

Neunhoeffer proposes to utilize special magnetic probes (sounds) with the giant-magnet. He admits that he has not succeeded in pulling fragments through the tissue, but has moved them a bit nearer to the wound channel. This is a brutal and hazard ous expedient, for the giant-magnet as compared with the hand-magnet is so powerful that its action is like that of a foreign body fastened to a strong cord on which a severe pull (compared with the switching on of the current) is exerted and maintained until everything gives way to the passage of the fragment, only that the string is invisible. The fragments being irregular, often sharp-edged, there is naturally great danger of injuring nerves and bloodvessels in the path.

Again, the question of infection looms up as a great danger. Certain experiences in military hospitals have shown conclusively that when a wound which has been doing well is subject to some jarring or irritation, dangerous infection (crysipelas) may be lighted up. Whether this irritation is from without inward or the opposite is immaterial.

In this respect the rontgen rays, otherwise so invaluable in military surgery, represent a veritable danger to the patients. A picture shows the bullet so plainly, so apparently easy to reach, that many have been tempted to attempt to remove the missiles. Only those who have been disappointed at not promptly finding the missiles and who have paid for their folly by anxiously watching the dangerous results of their unnecessary interference will fully realize the true meaning of the following axioms:

1. A metallic foreign body is usually a harmless

guest in human tissue.

2. If phlegmons or abscesses have developed from the gunshot wound, the missile within plays but a secondary rôle. The purpose of removing a missile in such cases is to establish drainage and should be undertaken only when it lies loosely in the abscess cavity. One should take care not to "dig" around for the fragments, as there is danger of spreading the infection.

3. Removal of a missile is indicated when demonstrated to be in a location in which we know by experience that foreign bodies act harmfully, viz., in the eye, urinary bladder, trachea, etc., or when its presence produces definite disturbances, such as pressure on the nerves and blood-vessels, disturbed

motion of articulations, tendons, or muscles, etc.

It is evident that the last indication demands keen diagnostic judgment, and that the mere presence of a missile on a röntgenographic plate in itself is not sufficient. The author cites several interesting experiences which show conclusively that a positive röntgen picture is not synonymous with clinical symptoms apparently indicating extraction of the foreign body shown on the plate.

#### LATE SECONDARY HÆMORRHAGES

These hæmorrhages are graphically described by Privatdocent Dr. Schloeszmann <sup>2</sup> of Professor Perthes' Clinic in Tübingen. Late secondary hæmorrhages of gunshot wounds differ from secondary hæmorrhages seen in civil practice to such an extent that the military surgeon is impressed by them with most disagreeable surprise, and prompt action is necessary if the patient's life is not to be endangered. Indeed, patients suffering from profuse secondary hæmorrhages have been brought from neighboring reserve lazarets to Perthes' Clinic for the purpose of operation, but many became exsanguinated and either died on the way or operative intervention came too late. In some cases lives could have been saved if the attendants had not waited too long.

<sup>&</sup>lt;sup>1</sup> Beitr. z. Klin. Chir., 1915, zcvi, Kriegschirurgische Hefte, No. 1.

<sup>&</sup>lt;sup>2</sup> Beitr. z. Klin. Chir., 1915, xcvi, Kriegschirurgische Hefte, No. 1.

A peculiarity of late secondary hæmorrhages is that they may occur without symptoms, so that the patient does not know what is going on. The blood flows through the dressings, then through the bed linen, through the mattress, and so on away from observation until the patient collapses, the warm covers preventing the patient from feeling the blood on the skin.

Among many observations one is highly instructive. The soldier was a medical student who was shot in the leg 15 days previous. The wounds of entrance and exit were granulating. At no time did the patient have a hæmorrhage. The leg

was placed in a fenestrated cast.

While using the bedpan the patient felt dizzy and weak. Believing that the straining incident to defecation weakened him he ordered the pan removed, and he laid down. There was no improvement; cold perspiration appeared. The comrades in the ward noticed that he was exceedingly pale. The surgeon was sent for, who, on noticing the pallor of the lips, became suspicious and examined the wound and then noticed that the bed was full of blood. In this case the patient himself misled his neighbors by blaming his threatening syncope to the act of defecation.

Another dangerous circumstance is the fact that these late secondary hæmorrhages often occur during the night, when the patient is asleep, perhaps under the influence of an opiate or sedative, and he passes from sleep into unconsciousness and death.

What causes these hæmorrhages? There can be but two causes: either they are the sequelæ of secondary arrosion of the vessels, or they are due to primary injury of a blood-vessel on the battle-field. Arrosion hæmorrhages are not unknown in civil practice. In gunshot wounds with comminuted fractures a splinter may be pressing against a blood-vessel, producing circumscribed necrosis and rupture of the wall of the vessel. If the perforations be large the resulting hæmorrhages may become dangerous. In war there is great opportunity for the "piercing" of blood-vessels by splinters, to which must be added the danger from transporting the patients; nevertheless, these forms of hæmorrhage are comparatively rare.

More frequently arrosion is due to suppuration and sepsis. Hæmorrhage is usually venous because the thin-walled veins cannot resist suppurative processes as well as the arteries. For this reason this kind of hæmorrhage is seldom immediately fatal. The "attack" frequently ceases as soon as the surgeon reaches the wounded, only to reappear in his absence. It is impossible to tell where the hæmorrhage comes from in a wound covered with granulations. The danger lies therein that under such circumstances the surgeon is tempted to be satisfied with tamponing the wound and waiting—until a stage of dangerous anæmia is reached.

Suppuration and sepsis are closely related, although in the latter the hæmorrhages are doubtless due to the altered composition of the blood—poor coagulation.

The prognosis of septic hæmorrhages in connection with the general condition of the patient is usually bad.

Treatment may be attempted to improve the power of coagulation by the topical application of fresh serum, pressed meat juice, fresh defibrinated blood, or certain preparations, but we must not forget that we are dealing not with a disturbance of coagulation but with an absence of fibrin-forming factors, principally fibrinogen. Constitutional treatment, therefore, is of equal importance. General improvement restores the fibrin-forming power of the blood, and the hæmorrhages cease spontaneously.

Surgical experience has shown that secondary arrosion of the vessels plays an unimportant rôle in the development of late hæmorrhages. Out of 11 cases operated upon only 3 could be traced with certainty to that cause, and of these one was a grave septic secondary hæmorrhage. Undoubtedly the majority of the late hæmorrhages are due—and this is specially important—to a primary

injury of the vessels by the bullet.

Experience has shown that the modern pointed bullet with its great speed does not allow the vessels to get out of its path, and clean perforations or complete division of smaller vessels are the rule. Primary exsanguination is often prevented by the small caliber of the missile and the narrow wounds of entrance and exit. What develops is an effusion of blood in the vicinity of the vessel injury. The tissues move closer and "tamponade" the wound channel. A hæmatoma develops and remains in communication with the pulsating blood-stream, which has been designated aneurisma traumaticum spurium.

Sometimes all this does not occur when the bloodvessel strongly retracts immediately after receipt of injury. Thombus formation acts as a provisional

closure of the source of hæmorrhage.

In all these cases there is danger of a late secondary hæmorrhage. Suppuration, increased blood-pressure, due to coughing, straining, motion, etc., may cause expulsion of the incompletely organized thrombus. The danger of late hæmorrhages lasts up to the fifth week; that is to say, until adequate granulation and contraction of the wound channel have forced the injured vessel into the depth of the tissues. Late hæmorrhages may occur also in through-and-through shots which run an aseptic course, even when the wounds of entrance and exit have probably closed. These have a different significance as far as prognosis and therapy are concerned.

Clinically the patients complain of gradually or rapidly increasing tension pain in the injured part, distally radiating nerve pains, and these are connected with peripheral paræsthesia. Examination shows the vicinity of the wound swelled and thickened, and soon the entire distal portion is ædematous. These are symptoms of pressure of the intermuscular hæmatoma on nerves and veins.

The temperature is increased in the evenings. Under proper treatment the symptoms gradually disappear in a few days, though the paræsthesia remains for some time.

The diagnosis is comparatively easy when one bears in mind the anatomic relation of larger bloodvessels to the wound channel. A mistake is possible in the belief that we have to deal with a developing abscess, and when one is misled by the patients' pleas to attempt an incision for the evacuation of the supposed pus the worst surprise is in store. Old and fresh coagula are pressed out by the ædematous muscles and soon there is a blood-stream where pus has been expected.

Schloeszmann has made such a false diagnosis, as have several other excellent operators, and lost the patient from heart-failure in spite of rapid double ligation of the concerned blood-vessel—

the femoral.

Indications for operative intervention in late secondary hæmorrhage from gunshot wounds can be formulated thus:

I. When a grave hæmorrhage has occurred once.

2. When a comparatively small hæmorrhage is repeated, perhaps to show by its increase, arterial character.

3. When smaller venous hæmorrhages exhaust the patient, producing a condition of increasing anemia

As regards the question of vessel suture the author believes that suppuration, hæmatoma, etc., forbid vessel suture, to say nothing of time, thickened walls, etc. In reality, ligature at a point of selection is only an emergency measure and must not be looked upon as a definite measure of arrest of hæmorrhage. One simply admits thereby the inability to reach the real source of hæmorrhage and one must not be surprised to observe a return of the hæmorrhage from the collaterals after a brief time. This is best illustrated by the following case, which is highly instructive.

A soldier was shot September 12, the infantry missile passing from the left processus mastoideus to the right inner eye angle. September 25th, there was a profuse secondary hæmorrhage from the left ear canal. There was a cessation of the hæmor-

rhage after tamponade with iodoform gauze and even after removal of the tampon. October 1st a second late hæmorrhage occurred from the wound of entrance during the night. After tamponade it ceased. At once upon examination of the wound profuse bleeding began from the ear and the wound of entrance. As the bone was in the way the external carotid was ligated under anæsthesia. Sounding of the wound channel produced no hæmorrhage. October 10th there was an exceedingly violent hæmorrhage (the third) from the wound of entrance. Operation showed that the arteria auricularis profunda had been injured by shot and was the source of hæmorrhage. Ligation was followed by recovery.

This case shows that the only proper treatment is

ligation of a vessel at the site of injury.

#### TECHNIQUE OF AMPUTATION

Amputations no matter for what purpose should be of the simplest possible character in field surgery. Complicated methods require too much time, and in the majority of instances flaps will slough. Simple circular amputation of the upper and lower extremities is the method of choice.

Stabsarzt Dr. Moser,<sup>1</sup> a regimental surgeon of the German Landwehr, from his personal experience during the present war suggests a simple modification for the purpose of saving blood without prelim-

inary constriction.

He makes a circular incision through the skin in a normal region, and divides the soft tissues by a like cut, only a little more centrally, but leaves intact those portions which contain the larger blood-vessels. After sawing through the bone or bones he secures the blood-vessels as high as possible by transfixion sutures in the soft parts, which are next divided distally. Over the ligatures, muscles and skin are approximated as closely as possible by two sutures and the stump dressed with the aid of adhesive strips. Moser did not lose enough blood (two cuts were through the upper third of the thigh) to require the use of a sponge. All his patients recovered after transportation to the rear.

1 Deutsche mil.-ärztl. Ztschr., Berl., 1914, Dec.

### GYNECOLOGY

#### UTERUS

Lewis, H. F.: Operations for Laceration of the Cervix Uteri. Illinois M. J., 1915, xxvii, 115. By Surg., Gynec. & Obst.

Fresh lacerations of the cervix rarely require treatment except aseptic prophylaxis. Immediate repair only is indicated when the tear has extended far enough up the portio to sever a branch of the uterine artery large enough to cause dangerous hæmorrhage; otherwise the danger of infection is too great to justify the rather remote advantages.

Laceration of the cervix per se is no indication for the secondary operation. Most multiparæ have more or less cervical laceration without symptoms which can rationally be attributed to that con-

dition.

The complications of the laceration are the only proper reasons for operating. These are: sterility or repeated early abortions; presence of granulations, erosions, or eversion of the mucous membrane of the cervical canal, especially hypertrophy of the anterior and posterior lips of the torn cervix with signs of chronic infection or passive congestion.

The etiological rôle of lacerations as predisposing factors in cancer is doubtful, but probably enough to have some weight in the decision to operate.

The two main types of operation are trachelorrhaphy and amputation. The former is adapted to those cases where there is little or no hypertrophy or infection; the latter for cases where hypertrophy and infection of the lips of the torn cervix exists; that is, in the majority of cases where any operation EDWARD L. CORNELL. is indicated.

Falgowski: Tendency Toward Conservative Operation for Myoma of the Uterus (Uber die konservative Tendenz bei der Operation der Uterusmyoms). Gynäk. Rundschau, 1914, viii, 351. By Zentralbl. f. d. ges Gynäk. u. Geburtsh. s. d. Grenzgeb.

Seventy-eight cases of myoma were operated upon. All the women recovered and no injuries resulted. Forty-one cases were operated upon abdominally and 37 through the vagina. Of 40 conservative operations 20 were by laparotomy.

In view of the good results with reference to both mortality and morbidity in the conservative operation for myoma, the author sees no reason why operation for myoma should be given up in favor of radical röntgen treatment. In spite of many successful results from röntgen treatment, Falgowski recommends that myomata be removed by operation, as the mortality can be reduced to zero; the functional capacity of the sexual organs is less FROMMER. injured than by irradiation.

Tracy, S. E.: The Treatment of Fibromyomata Uteri, Whether Surgery or Radiotherapy. Penn. Med. J., 1915, xviii, 353.

By Surg., Gynec. & Obst.

The author discusses the question as to whether fibromyomata uteri are best treated by operation or by radiotherapy. The literature is reviewed and some interesting deductions made from former statistical studies. He quotes from a series of 3.561 cases operated upon and collected about six years ago, wherein 1,180, cases, 33.38 per cent, showed degeneration and changes in the tumor and uterus or in the tubes, ovaries, or broad ligaments of such nature as to preclude cure by X-ray treatment. Malignancy was present in 4 per cent of the cases. In Tracy's own series of 79 cases, carcinoma occurred 5 times in the corpus and once in the cervix, sarcoma once, malignant cyst of the ovary with secondary involvement of the uterus once, a total of 8 or 10 per cent.

In view of the statements by some röntgenologists that the X-rays should be used in the treatment of fibromyomata uteri only in women past the age of 40, the author calls attention to his collection of 114 cases, published in 1008, wherein it is shown that 74, or 64.9 per cent, occurred after the age of 40.

Of Tracy's 87 cases there were two deaths. He believes that the mortality among skilled surgeons is between two and three per cent. He is decidedly of the opinion that X-ray treatment at best is but palliative and quotes Rovsing as stating the belief that radium promotes instead of checks cancer. Radiotherapy seems to be equally limited in value.

Röntgenotherapy should be limited to the treatment of these tumors as follows: (1) in a patient whose general health is so much below par, from any cause, that she could not withstand the shock of an operation; (2) in cases of marked anæmia to control bleeding until the patient is sufficiently restored to health to undergo an operation; (3) in a patient who continues to bleed after a myomectomy, the specimen removed showing no malignancy.

Early surgical intervention is the only rational treatment for these tumors which produce symptoms, except as stated above. Carey Culbertson.

Novak, E.: The Atropin Treatment of Dysmenorrhœa. J. Am. M. Ass., 1915, lxiv, 120. By Surg., Gynec. & Obst.

The use of atropin in the treatment of spasmodic dysmenorrhœa is based on the fact that atropin diminishes the irritability of the autonomic nerveendings in the uterus. In 1910 Drenkhahn reported remarkable results from the injection of a solution

of atropin directly into the cervical canal — 1 mg.

of atropin in 1 ccm. of water.

The author's experience with the atropin treatment of spasmodic dysmenorrhœa has been most encouraging. In the frequent cases of young, unmarried women, in whom pelvic examination is obviously undesirable and who present the classic picture of spasmodic pain recurring with each menstruation, the atropin treatment is indicated without the preliminary of pelvic examination. The author, in his own cases, followed the plan of Novak, though somewhat larger doses were frequently administered. His experience has been that the cases which respond most favorably are, speaking generally, those in which the atropin treatment has been pushed to the point of tolerance. The plan has been to commence the administration of the drug two days before menstruation is expected to appear and to continue its use until the second or third day of menstruation, depending on the usual duration of the pain. Ordinarily, about 1:100 grain is given three times a day unless some pain appears, in which event, if there are no symptoms of atropin saturation, the doses may be given somewhat more frequently. Many patients complain of dryness of the throat, itching of the skin, and sometimes even disturbed accommodation, in which case it may be necessary to lessen the dosage somewhat. When it is desired to study the effect of the atropin on dysmenorrhea, it is best to administer it alone, as in tablet form. In some cases, however, he has combined it with various other drugs of analgesic nature, such as aspirin.

EDWARD L. CORNELL.

Spitzig, B. L.: The Use of Citric Salts in Congestive Dysmenorrhœa, the Relation of the Latter to the Vagotonic State. J. Am. M. Ass., 1915, lxiv, 733. By Surg., Gynec. & Obst.

Increased viscosity of the blood is a factor in the production of dysmenorrhea. The causative factor is faulty hygiene, defective elimination, nitrogenous overindulgence, sedentary occupation, and tight lacing. At the time of uterine congestion, the blood in this organ is more viscid, and with the accompanying stasis there is greater infiltration of serum into the neighboring tissues. This induces a change in the chemical equilibrium of the endometrial cells by causing the cellular colloids to absorb more serum, transforming this gelatinous material into a viscid mass. The effects are greater distention of the spongy layer and increased vascular stasis and mucus production, with consequent shedding of fibrinous and thrombotic membranes. With this morbid state the ovum cannot readily engraft itself, and sterility is a frequent sequel. Reducing the viscid blood inhibits the formation of clots and membranes; stasis is diminished and excessive ædema of the endometrium retarded. Bleeding through the glands is increased and diapedesis through the stroma and epithelium lessened.

In regard to treatment, nitrogenous food raises

the viscosity of the blood and accordingly is restricted before the menses. Catharsis depletes the portal circulation and at times a hot compress is applied for the purpose of relaxation. The important procedure is the reduction of viscosity through the use of sodium citrate, 20 grains, three times daily, during the week or two preceding the expected period. The mode of action is peculiar to the citrates. Diuresis does not explain the results. It seems probable that the alkaline citrate neutralizes carbonic acid and other waste products and increases oxidation, thus proving to be the most efficient method for preventing cellular ædema and diminishing viscosity.

The clinical evidence in support of the efficacy of this treatment is the lessening of pain and the reduction of clots and membranes in the menstrual discharge. Further, nausea, dizziness, headache, and mental irritability are vastly improved.

There are types in which dysmenorrhoea is an expression of the vagotonic state. Increased irritability of the craniosacral nerves leads to a higher degree of uterine and cervical spasm. Atropin relieves the condition.

EDWARD L. CORNELL.

Theodor, P.: Bacteriological Examination of Blood After Curettage (Bakteriologische Blutuntersuchungen nach Curettagen). Beitr. z. Klin. d. Infektionskr. u. z. Immunitätsforsch., 1914, iii, 337. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In cases in which after abortion the uterus is sufficiently firm and contracted and where continued bleeding indicates that remnants are retained, the uterus is no longer emptied with the finger, but is curetted in order to prevent the mechanical pushing of the bacteria into the circulation. Two to three minutes after the curettage aërobic and anaërobic blood-cultures were made in 60 cases. Theodor found bacteræmia in only 15 per cent of cases after curettage for febrile abortion, while there was bacteræmia in 77 per cent of the cases in which the uterus was emptied with the finger. Salpingitis as a complication was rare, occurring in 13.3 per cent of the cases. In none of the 60 cases reported was there an infection of the veins or lymphatic vessels of the parametrium, or sepsis.

GOLDSCHMIDT.

Dorr, R. C.: Some of the Malformations of the Uterus and Vagina; Report of a Case of One of the Rarest Forms. Southwest J. M. & S., 1915, xxiii, 7. By Surg., Gynec. & Obst.

Dorr reports the case of a woman, aged 35, mother of four children. Family history negative. A few days before her examination she had an abortion with resulting sepsis. She was found to have a double vagina, the septum extending well between the labia majora; there was a feetid discharge from the left uterus. One and one-half years before she had been delivered of a healthy male child from the right uterus. All the children are healthy.

C. D. Holmes.

Hutchins, H. T.: A Few Notes on the Treatment of Anteposed Uteri. Boston M. & S. J., 1915, clxxii, 18. By Surg., Gynec. & Obst.

For many years an anteposed fundus has been regarded as the normal position of the uterus, and a uterus found in this position has been thought incapable of producing pelvic symptoms, especially those of low sacral backache, pelvic drag, and pelvic congestion. That the classical symptoms of retroposition of the fundus not only can be, but frequently are, caused by a uterus in anteposition, the

author believes to be true.

The anteposed uterus has received but little attention from a symptomatic standpoint. The author's attention was called to this fact by the appearance of many patients in his clinic complaining of low sacral backache and feelings of lack of low abdominal support, pelvic drag, etc., in whom, on examination, the fundus was found to be anteposed. At first he was at a loss to explain these symptoms, which occurred as frequently in women who had not borne children as in those who had. Study soon showed that the anteposed uterus was capable of as wide excursions from the normal as the retroposed. So many cases appeared with retroposed fundus who had no symptoms of backache and pelvic drag that the position of the fundus was disregarded entirely in making the diagnosis. Attention was confined to the relative position of the cervix only in relation to the pelvic frame. It was then found that the anteposed uteri did not occupy a fixed position in relation to the pelvis. but they were found to be in varying degrees of ascensus and descensus, according to the stability of the cervical supports. Some were found to be held snugly up to the symphysis, with the bladder and anterior vaginal wall well supported, while others were found to have dropped back toward the hollow of the sacrum, while still maintaining their anteposed positions. It was possible by properly placed tampons, which forced the uterus as a whole well upward, relieving the drag on the cervical supports, to relieve the patient of all her

Opening the abdomen by a generous incision the following conditions were noted: In cases where the uterus as a whole is well held up in the pelvis by its cervical supports, whether the fundus is in anteor retroposition, there will be (1) no fullness, congestion, or dilatation of the ovarian and anastomosing veins as they run through the infundibulopelvic and broad ligaments; (2) there will be present no drag on the parietal peritoneum covering the lateral walls of the pelvis, especially that part covering the infundibulopelvic, ligament; (3) there will be no tension on either the round or uterosacral ligaments, which, in turn, are covered by parietal peritoneum; (4) there will be no descent of the bladder or en-

gorgement of the vesicle veins.

Quite a different picture is presented in that group of cases in which the cervical supports have given way and the uterus as a whole has descended

into the bottom of the pelvis, still without regard as to whether the fundus is anteverted or retroverted. In this group of cases there is seen on inspection: (1) The ovarian and anastomosing veins full, congested, and dilated, forming a so-called varicocele of greater or less intensity. This fullness and distention extends throughout the pelvic portion of these veins, but, it will be noticed, ends abruptly as the veins cross the posterior pelvic brim from which point upward they are normal in size. (2) The infundibulopelvic ligament and parietal peritoneum are put decidedly on the stretch, the chief drag coming from the posterior part of the pelvis at or near the attachments over the sacro-iliac joint. (3) The round and uterosacral ligaments share in this drag. (4) The bladder has gone down with the descent of the cervix and the vesical veins have shared the general pelvic engorgement.

The observations made at the time of operation and the results that have been obtained by operation have led to the conclusion that sacral pain and backache may be caused by a uterus in descensus, regardless of the position of the fundus, provided that by this descent the pull is transmitted to the parietal peritoneum covering the ovarian vessels forming the so-called infundibulopelvic ligament, and that with this pull there is present a stasis in the ovarian and anastomosing veins. This possibility should be borne in mind when examining a patient, whether the fundus is forward or not, and the amount of the descensus noted. A moment taken at the time of operation to inspect structures in situ is well spent and may lead to a more beneficial operative procedure than by following an accustomed routine. The effect of a suspension of the uterus should be noted as far as possible before the method of performing that suspension is determined EDWARD L. CORNELL.

Noble, G. H.: Intra-Abdominal Dynamics and the Mechanical Principles Involved in the Cause of Backward and Downward Displacements of the Uterus. Surg., Gynec. & Obst., 1915, xx, 45. By Surg., Gynec. & Obst.

The author exhibits original work, and takes up this subject from a new viewpoint. He begins with intra-abdominal dynamics, having arrived at a working basis by measuring intra-abdominal pressure in the active, passive, normal, and abnormal states. By the use of an apparatus he designed for the purpose he represents the uterine ligaments as sustaining 25 per cent of abdominal strain and he describes the transmission of the excess to the side walls and floor of the pelvis. He deals carefully with the anatomy of the pelvic ligaments and fascia and compares their action and functions in varying circumstances.

Attention is called to the fact that the four pairs of muscular ligaments are made up of unstriped muscular fibers—muscular prolongations from the uterine muscularis; that they behave not unlike the uterus in varying circumstances; they become softened, cedematous, and relaxed in puerperal infection, and are incapable of sustaining the uterus. In health these ligaments hypertrophy and help to bear increasing weight in the early months of preg-

A system of units is employed to express comparatively the difference of pressure exerted upon the upper and lower poles and the anterior and posterior surface of the uterus and its effect in maintaining the nearly even balance of the uterus in the pelvis. On the other hand, he shows what little disturbance will destroy this balance and revolve that organ around the pivotal point. He also deals with abdominal pressure and the mechanical principles involved in connection with lesions of the pelvic floor; measuring the full extent of abdominal strain at the vaginal orifice when the perineum is destroyed; dissipation of diaphragmatic displacement in relaxed abdominal walls; describes conditions predisposing to cystocele and rectocele, and tells when one will likely precede the other.

An account is also given of retrodisplacements having their origin in the puerperal state. This paper is clear, concise, and shows a great deal of study.

It contains many other points of interest.

#### Roberts, W. O.: Inversion of the Uterus. Internat. J. Surg., 1915, xxviii, 33. By Surg., Gynec. & Obst.

In this paper the author gives some notes on the history, relative occurrence of this condition, its etiology, diagnosis, pathology, and symptomatology,

as well as its prognosis and treatment.

Uterine inversion was recognized and its etiology apparently understood by the ancients, for Hippocrates in 430 B.C. gives a clear description of its pathology and refers to treatment by manual reposition (taxis). Soranus in 110 A.D. excised a gangrenous inverted uterus which was followed by recovery of the patient. From a large number of reports on the relative occurrence of inversion of the uterus it seems to be present about once in 130,000 labors, but the author thinks this is perhaps not correct, as the condition probably is found in private practice many times and not reported. Thorne in 1911 collected from the literature 641 cases of inversion, of which 82.2 per cent were obstetrical in origin; 13 per cent due to uterine tumors; 2.2 per cent occurred post-partum; 2 per cent idiopathic; and 1.6 per cent occurred after abortions or premature labors. Of 400 cases collected by Crosse 88 per cent were puerperal, 12 per cent being due to neoplasms and other causes. Regarding age, by far the largest number are met with between 20 and 30, as this is the period of the greatest number of births.

Of the primary and secondary obstetrical causes the following are entitled to specific emphasis:

r. Primary and essential — uterine relaxation:

From so-called uterine inertia;

From mechanical failure of the musculature (paralysis).

2. Secondary — fundal pressure (above), funic traction (below):

From improper application of the Crede method;

From inordinate funic traction;

From naturally short or mechanically (c) shortened funis.

3. Other factors which contribute to uterine inertia are:

Unduly prolonged labor; Systemic debilitating disease.

4. Purely idiopathic — rare.

Of the recognized gynecological causes of inversion, only the following need be mentioned:

Uterine neoplasms:

(a) Fibromata — intra-uterine, submucous, and polypi;

Sarcoma, carcinoma.

Contrary to the generally accepted opinion, the diagnosis of uterine inversion is sometimes quite difficult of accomplishment. The roundness of its body, the narrowness of its neck, and its being encircled by the orifice of the uterus sometimes makes it resemble exactly a polypus of the fundus. condition must be differentiated from sarcoma, polyp, and fibroma, as well as from exaggerated and complicated procidentia. Examination during the administration of an anæsthetic may demonstrate the presence of contractions in an inverted uterus, thus distinguishing the mass from a tumor. With the patient anæsthetized it may be possible to detect a depression at the normal fundal site.

Practically all the acute cases occur during or immediately after the third stage of labor, the cardinal symptoms being hæmorrhage, shock, and pain. Local infection often occurs and is always a dangerous complication. Vaginal examination reveals a soft, pear-shaped, bleeding mass, with the placenta often attached thereto, while in chronic cases the symptoms may be greatly modified; vesical and rectal symptoms are not uncommon. Whether there is partial or complete vulvar fundal protrusion depends on the degree of inversion. In the presence of incomplete inversion or considerable endometrial ædema the tubal orifices may not be

demonstrable.

In acute cases the prognosis is always grave and the earlier the condition is recognized and proper treatment instituted the more favorable the outcome. If the condition once becomes chronic there may be little variation in the pathology or symptomatology for months or years. The prognosis is variously given by different men as 14, 25, 35, 70, and 75 per cent, with a comparatively low mortality with the chronic cases. Treatment may be operative, non-operative, and mechanical. Occasionally spontaneous reduction occurs in acute cases. Where manual reduction seems applicable in acute cases, it should be undertaken immediately. Some sort of support may be needed for a time, the patient being kept absolutely quiet. Operation is the only recourse in the majority of the chronic cases.

Of all surgical procedures recommended for this condition vaginal hysterectomy is probably most satisfactory, unless the patient is early in the child-bearing period, when a more conservative procedure may be considered. The author reports two cases of his own, one acute and one of a few months' duration

The first case, the patient, a thin, delicate woman, aged 23, had had a tedious labor with her first child, followed by forceps extraction. The placenta was delivered by the Credé method with copius hæmorrhage and inversion immediately following, which was reduced at once by taxis. Delivery six years later was perfectly normal with no recurrence of inversion. The second case was a woman, aged 25, whose first labor was very long, the delivery being finally accomplished without forceps. The placenta was delivered within one-half hour and a vaginal tumor larger than a goose egg was noticed immediately. Hæmorrhage was slight for two months, followed by one or two months' excessive flow. The patient became greatly exsanguinated and a vaginal excision was done near the constricted portion leaving a one and one-half inch stump. Recovery was uneventful. C. D. HOLMES.

Carnelli, R.: Treatment of Prolapse of the Uterus by the Schauta-Wertheim Operation (Sulla cura del prolasso dell' utero coll' operazione di Schauta-Wertheim). Ginecologia, 1914, x, 737. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author gives a detailed discussion of the literature on the treatment of prolapse, a description of the Schauta-Wertheim operation, and a table showing the results of 14 Schauta-Wertheim operations performed at Solari's clinic. The post-operative course was always good. Euphoria, often ischuria, dysuria, and pollakiuria followed the operation. The patients were catheterized as a matter of routine and often given enemata. They remained in bed a month. No vaginal irrigations were given, the vagina being merely dry sponged.

Among the 6 cases operated upon from 1909 to 1911 there were no recurrences; among the 3 in 1912 there was one recurrence. In this case, in which there was total prolapse of the uterus and vagina, colpoperineorrhaphy was not performed. Among the 5 cases operated upon in 1913 there were no recurrences. One of these patients who was not sterilized had an abortion three months later. The pregnancy was accompanied by pain and ischuria; there was no displacement of the uterus.

In operating for prolapse it is preferable that the operator should have a great deal of experience in the method chosen.

MESTRON.

Duckering, F. W.: Plastic Surgery in Procidentia.

Boston M. & S. J., 1915, clxxii, 292.

By Surg., Gynec. & Obst.

The author reports twenty-five cases of procidentia which were operated on solely by the vaginal route. The operative procedure was as follows: The cervix was dilated and the uterus curetted; a circular incision was made about the cervix; the bladder and rectum were pulled back. Then one to two inches of the cervix was amputated after the uterine vessels had been tied off in women beyond the child-bearing age. For the cystocele the author has recently used a central-flap operation with good results, and for the perineum the usual Emmet operation.

The results although showing some few recurrences are surprisingly good, in view of the fact that no abdominal operation was performed.

DONALD MACOMBER.

Kraus, E.: Anæsthetization of the Uterus (Zur Anästhesierung des Uterus). München. med. Wchnschr., 1914, lxi, 1515.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author uses novocaine-suprarenin with syrupus simplex in the proportions of 100 gr. syrupus, 5 gr. novocaine, and 0.15 gr. suprarenin (Höchst). After boiling the mixture he applies it with sterile Hagar's dilators.

The sugar-coated tablets are dipped in lukewarm water before being applied. Each tablet is left in the cervix until the coating is melted, after which anæsthesia takes place. The method was successful in 24 cases.

Lieb, C. C.: The Pharmacology and Physiology of the Excised Human Uterus. Am. J. Obst., N. Y., 1915, lxxi, 209. By Surg., Gynec. & Obst.

The author reviews the recent work along these lines and gives a description of his experiments and the results. As soon as the organs had been excised, strips were cut from them and transferred to a large jar containing 500 ccm. of oxygenated Ringer's solution. If the tissue was to be studied immediately the temperature was kept at 38° C.; if for later tests it was immersed in a solution at 5 to 10° and put in the ice box. For the study of uterine tissue a small segment was excised from the outer muscular layer. The movements of the muscle were recorded by a lever of the first order on the smoked paper of a slowly turning kymograph.

In the non-pregnant uterus he found the contractions of the external coat slow but powerful. The movements may be regular in their rhythm or the interval between successive contractions may differ greatly. With the parturient uterus he found that the movements of the external longitudinal coat are of two types. In the first they are simple waves, and there is little change in tonus. In the second there are large coarse waves on which are superimposed smaller contractions. In the one case, in which the movements of the oblique fibers of the middle coat were recorded, the waves were of the first type.

He found that the longitudinal fibers of the fallopian tube have a much faster rate of contraction, and in the non-pregnant tube the rate varied from

120 to 200 per hour. The movements of the inner circular fibers closely resemble those of the outer. With pregnancy, however, the movements of both the circular and longitudinal fibers become slower but stronger, and the tonus changes become very pronounced.

These experiments show that the uterus and tubes contract and relax rhythmically when completely separated from the central nervous system, and the author believes that the stimuli arise within the muscle fibers. He suggests that the wave may begin in the tube, sweep over it, and finally involve the uterus.

The non-pregnant uterus is inhibited by sympathetic stimulation and by epinephrine; the pregnant uterus is thrown into increased activity. From his experiments the author believes that the sympathetic innervation of the human uterus is always motor in quality. Epinephrine, while valuable in a douche for post-partem hæmorrhage, should not be given intravenously, and should not be used

as an ecbolic.

The use of ergotoxine caused a powerful contraction of the muscle-fibers of the parturient uterus, which passed over into very high tonus. There was a suggestion of tetanus, soon broken through, however, by numerous contractions. The rate of these waves was about twice the normal. Parahydroxyphenalethylamine, which is closely related chemically to epinephrine, simulates in its action the stimulation of the true sympathetic nervous system. Beta-imidoazolyethylamine causes an increase in tonus, and there is a distinct tendency for the feeble spontaneous contractions to pass into a tetanus. Ergot causes a very slight increase in tonus but a considerable augmentation of the rate and strength of the individual movements.

Pituitary extract made the movements of the oblique fibers of a uterus removed by cæsarean section stronger and much more rapid; the tonus was greatly increased. Even with very large doses there was no tetanus. The non-pregnant uterus, however, is unaffected or is depressed. The author suggests that the pregnant uterus becomes sensitized to pituitary extract. C. H. DAVIS.

#### Haines, W. D.: Hysterectomy from the Viewpoint of the General Surgeon. Lancet-Clin., 1915, By Surg., Gynec. & Obst. cxiii, 41.

The problem of when to remove the uterus and when not to in gonorrheal infections, next to the early recognition and radical treatment of cancer of the uterus, is the most important problem which awaits solution at the hands of the present and

future gynecologist.

In dealing with an ascending infection which has involved the glandular structure of the uterus and destroyed the functional powers of the tubes and ovaries, surgeons are almost of one mind concerning the removal of the diseased appendages. To the author's mind, the larger problem of dealing with

the infected uterus should be the chief concern. Manifestly there is nothing to be gained by leaving an enlarged, painful uterus in dealing with double gonorrheal tubo-ovarian lesions; on the contrary, lost opportunity, prolonged post-operative morbidity, and the humiliating experience of seeing the patient drift from one physician to another in search of relief are not infrequently witnessed by those given to such practice. It is good surgery to operate during the quiescent stage of the disease, by removal of tubes, ovaries, uterus, and infected vaginal glands. The most important of all conditions demanding hysterectomy is cancer of the cervix or body of the uterus.

The author also recommends hysterectomy in cases of fibroid tumors of the uterus which cannot be removed by myotomy. EDWARD L. CORNELL.

#### Stone, I. S.: The Temperature Range After Supravaginal Hysterectomy for Myofibromata. Surg., Gynec. & Obst., 1915, xx, 181.

By Surg., Gynec. & Obst.

The author asks, "What is a normal temperature?" In almost all cases a rise of one or two degrees has been observed and in most instances

no morbidity has been discovered.

However, careful examination of the region about the cervical stump occasionally discloses certain indurations, hæmatomata, ovarian swelling, etc., which the author believes favor the development of morbidity, if infection occurs. He has concluded that phlebitis and embolism have their inception from this source. The author has found the "remaining ovary" enlarged (swollen) in several instances and has found that such ovaries may become cystic.

In order to secure a perfectly aseptic field, the author sterilizes the uterine mucosa with iodine preliminary to operation. A number of tem-

perature charts accompany the paper.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Nattrass, J. H.: Autoplastic Ovarian Transplantation. Med. J. Austral., 1915, i, 49. By Surg., Gynec. & Obst.

The author cites the case of a woman, 17 years of age, who was delivered by cæsarean section due to generally contracted pelvis from tuberculosis, and, in order to prevent further conception, the ovaries were transplanted into the anterior abdom-

inal wall. The technique was as follows:

The ovaries were excised in the usual way and were immediately placed in normal saline solution at 98.4° F.; each ovary was then incompletely divided longitudinally through its hilum and as much ovarian stroma as possible was cut away with curved scissors, the reason for doing this being that the transplanted ovary degenerates in an amount directly proportional to its thickness and density, and by sacrificing the fibrous stroma the remainder is more easily permeated by nutrient fluid, therefore less degeneration occurs and more of the egg-bearing part may be saved. Having thus prepared each ovary under saline, the sheath was separated from the anterior surface of the left rectus muscle until the outer border of that muscle was quite free. The surface of the incompletely divided left ovary was fixed by a few catgut sutures to the muscle border in such a manner as to form a sandwich with it. The cut surface of the right ovary was placed on the right external abdominal oblique muscle, being fixed in position with catgut ligatures about two inches from the middle line, where the muscle is situated close under the skin.

The patient made an uninterrupted recovery and left the hospital 22 days after the operation. The child suckled the breast for nearly five months, when lactation was discontinued. The first mentsruation appeared one month later, which was quite painless, lasted only three days, and was moderate in amount. She continued to menstruate fairly regularly every month, sometimes not going the full 28 days, sometimes going longer, the duration being three to four days. The flow was always moderate and usually painless, but sometimes she knew when she was going to menstruate by tenderness in one or the other grafted ovaries, and most often in the subcutaneous one. She thought the ovary swelled a little on these occasions. The tenderness was increased on pressure and immediately relieved when the flow commenced.

Three and a half years after the operation the author examined the patient. The subcutaneous graft could be felt quite easily, and, on palpating it, the patient experienced a sickening sensation. The left ovary, which was placed more deeply in the left rectal sheath, could not be palpated definitely, but a spot could be found which on pressure caused a sickening sensation, similar to that on the right side. This sickening sensation and the occasional pain on menstruation are interesting, as they seem to indicate the development of nerves in the graft similar to the development of blood-vessels, which is known to occur.

In general appearance the patient looked exceedingly well; the uterus was normal in size; there were no symptoms of the menopause.

The author also discusses the subject of ovarian transplantation.

EDWARD L. CORNELL.

Löhnberg, E.: Plastic Operation on the Mouth of the Fallopian Tube (Klinische Erfahrungen über Salpingo-Stomatoplastik). Monatschr. f. Geburtsh. u. Gynäk., 1915, xli, 62. By Surg., Gynec. & Obst.

A. Martin introduced this operation in 1885; he resected a piece of the tube, turned back the mucous membrane, and sutured the mucous and serous coats together so as to form a new ostium. He performed it in 65 cases, and among 47 that he was able to examine later only 2 had conceived after the operation. The operation has not been very extensively used since then. Gellhorn found that up to 1011, 13 successful cases had been reported in

international literature. Löhnberg reviews briefly the cases reported since then and discusses 21 cases operated upon at his own clinic from 1908 to 1913.

He thinks the operation is justified in chronic inflammatory conditions of the tube where the walls are not very much damaged; also in moderate degrees of hydrosalpinx if it is certain that there is no recent inflammatory process; also in perisalpingitic processes that have caused adhesion and occlusion of the tube. Of course it is useless to perform the operation unless the whole length of the tube is penetrable, which should be determined beforehand by the introduction of a sound. It is absolutely contra-indicated in pyosalpinx. It should be performed only in comparatively young women who have had few children or none at all and who desire to remain capable of conception. The average age of Löhnberg's cases was 26 years; none of them were over 30.

Recovery after the operation was uneventful. In two of the cases he was obliged to perform another laparotomy later for retroflexion; however, not for any condition produced by the previous operation. In the 14 cases that he was able to examine later pregnancy had not occurred once. Pregnancy does not follow a very great percentage of the operations, but he thinks the psychic effect of the possibility of renewed conception on the woman who desires children is of sufficient value to compensate for the slightly added danger of extrauterine pregnancy. He thinks this danger exists. anyway, chiefly in cases where there were previously such changes in the tubes as to favor the occurrence of extra-uterine pregnancy. A. Goss.

Amberger: Operative Treatment of Inflammatory
Diseases of the Adnexa and Their Relation to
Peritonitis (Beitrag zur operativen Behandlung
der entzündlichen Adnexerkrankungen und ihren
Beziehung zur Peritonitis). Beitr. z. klin. Chir.,
1915, xcv, 272. By Surg., Gynec. & Obst.

The author bases his report upon 53 cases of salpingitis which he operated upon. He comes to the conclusion that in mild cases, occurring for the first time or that have not been treated, conservative treatment is to be recommended and an operation should be performed only after this has failed. In severe cases, or those of sactosalpinx, operation should be performed.

In the author's opinion, the fear of operation in the acute stage is not justified. Sixteen of his operations were performed in the acute stage and six of them were circumscribed peritonitis; there were no deaths. Of his chronic cases without peritonitis, he lost only one very severe case. If appendicitis cannot be definitely excluded in such cases, operation is indicated. In these cases the diseased tube must be removed. If peritoneal irritation due to the tube is diagnosed, operation can be deferred, but the great danger of further progress of the disease must be borne in mind. If peritonitis has already begun, operation is indicated. Even if there

is no danger of disease, and the tube has been energetically palpated, it should be removed. He cites a case where failure to do so resulted in fatal

peritonitis.

Operation in acute stages of salpingitis is no more dangerous than it is in acute appendicitis. It is considered a great advance in the treatment of appendicitis that surgical treatment has replaced conservative treatment more and more. It is difficult to understand why the opposite tendency The parallelism has been shown in pyosalpinx. between the two diseases is not perfect, but it is very pronounced. Both are very dangerous to life and health; both can be relieved by relatively harmless operations. The diseased tube, in the great majority of cases, is certainly of no further value to the

Groth, among 700 cases treated, had only 7 cases of pregnancy, 3 of these ending in abortion, and Thaler, among 1,772 cases, found only 27, or 1.5 per cent, who subsequently bore children. It is difficult, therefore, to see why the patient should be subjected to a treatment which demands much time and money and only restores complete function of the diseased organ in a small percentage of

cases.

### Ferguson, R. T.: Surgery of Pus Tubes. J. So. Suson, R. 1.. Car. M. Ass., 1915, xi, 41. By Surg., Gynec. & Obst.

A. Goss.

The author believes that an acute case of salpingitis demands an immediate operation, just as much as an acute case of appendicitis, and a chronic case is always a fit subject for operation. In the acute cases the author removes the tube without rupturing it and does not drain, but in the chronic cases he uses drainage and the Fowler C. H. Davis. position.

#### Lockhart, F. A. L.: Pelvic Inflammation. Canad. By Surg., Gynec. & Obst. M. Ass. J., 1915, v, 8.

The author describes his technique used in a series of 22 cases of pelvic inflammatory trouble treated since January, 1913, by non-operative measures, and states that in 15 of these cases the application of hot air to the abdomen was the treatment instituted; the number of bakings varied from 16 to 74, the average being about 40. In a majority of cases the baking was done twice daily for twenty minutes at a time. In many instances the treatment included vaginal douching, tamponing, and the application of tincture of iodine to the vaginal fornices. Two of the acute cases were treated by this method, but the acute condition was subdued first by the application of ice to the lower abdomen, rest in bed, etc., after which the hot air was applied. In one case which showed no improvement after several weeks of ordinary treatment the application of hot air caused the mass, which had been present for some time, to almost entirely disappear. Gellhorn's apparatus is recommended as the best means

of obtaining the heat. The use of this method, Lockhart believes, will save many cases from the dangers of extensive and mutilating operations. WILLIAM D. PHILLIPS.

#### EXTERNAL GENITALIA

Oliver, T.: Radium and Its Efficacy in Cancer of the Vulva. Lancet, Lond., 1915, clxxxviii, 272. By Surg., Gynec. & Obst.

The author reports a case in which there was a recurrence after an extensive operation for cancer of the vulva. A second operation was impossible owing to the involvement of the external coat of the rectum. A tube of radium was inserted into the vagina and left there for twenty-four hours. Following this application there was some inflammation for a few days. A breech in the mucous membrane, which had occurred in the active stage of the inflammation and from which pus had for a time exuded, gradually closed, the hard mass continued to shrink, and four months after application of the radium it had entirely disappeared, leaving a healthy vaginal mucous membrane, tissues underneath soft and healthy to the feel, and apparently a normal septum between the vagina and rectum. The patient is leading an active, vigorous life and is looking the picture of health. C. H. DAVIS.

Horne, G. T.: Report of Fusiform Bacillus as Found in the Vagina. J. M. Ass., Ga., 1915, iv, By Surg., Gynec. & Obst.

The patient, aged 25, had had a discharge for six years. It began following the birth of the first child and had grown gradually worse. She denied any history of a venereal infection, and there was no history of the child having had sore throat or sore eyes.

Physical examination showed an incomplete perineal laceration, mucopurulent vaginal discharge with ulceration of the vaginal mucosa and vaginal portion of the cervix. There was a discharge from the cervix and thickening of both broad

ligaments.

The vaginal walls were wiped with dry gauze, followed by a careful and thorough sponging with hydrogen peroxide. A tampon of gauze saturated with peroxide was left in the vagina to be removed the next morning. She was instructed to use tincture of iodine as a douche three times daily.

EDWARD L. CORNELL.

#### MISCELLANEOUS

Butner, A. J.: The Relation of Tubercular Infections to Gynecological Affections. Illinois By Surg., Gynec. & Obst. M. J., 1915, xxvii, 92.

The toxin theory is generally accepted as plausible in explaining the gastro-intestinal disturbances of tubercular patients, such as anorexia, etc., but the absent, delayed, and scanty menstruation of the pubescent tubercular girl is as generally attributed to a conservative act of nature, which is, to say the least, empirical thinking if not an assumption entirely void of scientific truth. If nature be such a strict conservator of energy to deny womanhood to the tubercular pubescent at the small cost of the catamenia, she certainly would not be so neglectful of the ruinous waste in the process of digestion and assimilation in the same subject.

The menarche of the tubercular girl is delayed or wanting, not because of an economical anabolism or conservatism of nature, but rather from a catabolic toxin being elaborated by the growth of the tuberculous bacilli having a selective action in some unknown way over menstruation, probably by the influence of the toxin on the internal secretion of

the ovary.

There is a marked contrast in development between the non-tubercular pubescent and the tubercular girl who has arrived at or past the expected age of puberty. On the one hand there is a sudden and wonderful transformation, both physical and psychical. The pelvis enlarges, the limbs round out, and the angularity of the body is replaced by graceful curves. The general carriage and manner of the girl rapidly approach a state wholly feminine. On the other hand, her counterpart lags through her teens with a form and physique sorrowfully childish if not neuter in character.

In the menacme also is found the subtle touch of this mischief-worker. It is very difficult to separate the gynecologic symptoms arising from tuberculosis during the childbearing period of woman from other conditions dependent upon marital relations, such as pregnancy and the consequence incidental there-

to, venereal and other infections.

Four cases are briefly reported in which the patients complained of gynecological symptoms. In each the chest was involved with tuberculosis.

In conclusion, the author says that often much more valuable information concerning gynecologic affections may be found in the thoracic than in the pelvic cavity and that no gynecologic examination is complete that does not take the lungs into consideration.

EDWARD L. CORNELL.

Geiger, O.: The Phenol-Serum Treatment of Pyogenic Processes in Gynecology (Die Phenolserumbehandlung pyogener Prozesse in der Gynäkologie und ihre experimentelle Grundlage). Beitr. z. Klin. d. Infektionskr. u. z. Immunitätsforsch., 1914, iii, 245.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In six cases of pyogenic processes of the genital organs the author tested phenol-serum treatment by Lorey's method. With small amounts of phenol there was an inhibitory effect on the bacteria. The phenol forms a loose combination with the albumin bodies of the serum, which does not, however, affect the disinfecting power of the weak lowper-cent phenol. Phenol bouillon has a much stronger disinfecting power than phenol serum. The author thinks the reason for this difference lies in the difference in the albumin bodies. Phenol, which has an affinity for albumin bodies, probably combines more firmly with the highly molecular, coagulable, albumin substances of the serum than with the peptones of the bouillon.

G. Hirsch.

Cadwallader, R.: Urinary Incontinence in Women. Surg., Gynec. & Obst., 1915, xx, 240.

By Surg., Gynec. & Obst.

Cadwallader reports an operative cure of incontinence of urine in the case of a woman upon whom a lithopexy had been done some years before. He made a circular incision around the posterior half of the meatus and from the middle of this another backward for 4 cm. The mucous membrane was lifted up, the sphincteric left, and the supporting tissues mattressed with four iodized catgut stitches. The redundant membrane was cut away. The operation was essentially that of Howard Kelly though independently thought out. The woman was discharged with a bladder capacity of three ounces and perfect control for two hours.

### **OBSTETRICS**

#### PREGNANCY AND ITS COMPLICATIONS

Benninghoff, G. E.: A Case of Abdominal Pregnancy. Internat. J. Surg., 1915, xxviii, 50. By Surg., Gynec. & Obst.

The patient was of foreign birth, spoke no English, was of spare build, with thin abdominal walls. She presented a large abdominal tumor, which could be grasped between the hands and displaced in every direction without pain. Pressure symptoms only were complained of, these being evident chiefly when the patient was in the erect position. The tumor had been present for the past three years with distress in the last three months only. Operation for removal of a probable subserous fibroid was advised. There had been no hæmorrhage; menstruation was regular, not painful; she was the mother of five children.

With a midline incision the tumor was easily raised out of the abdomen, when it was seen to be covered entirely by omental bands, transverse colon, and several coils of the ileum. After removal the irregularly formed mass was found to be about 5 x 8 inches and weighed four and one-half pounds. Near the middle of the long axis was a long pedicle which passed down to beneath the left broad ligament. This was followed down and found to terminate in a placenta weighing 4.5 oz., and was easily shelled out. The fœtus was completely enveloped in a sac. It was not a lithopedion, but surrounding the fœtus and within the sac was the so-called adipocere formation.

The patient had an uneventful recovery, and before leaving the hospital gave the following history: She missed her menstrual period in June, 1911, and did not menstruate again for nine months, or until March, 1912, when she expected to be confined. March 14th she had severe pains for two hours, which subsided. The pain was in every way like that of former labors, but not continued. She menstruated the following month, April, 1912, and continued regularly after up to the time of operation.

While this history is not absolutely typical of extra-uterine or abdominal pregnancy, it was characteristic enough that one would have diagnosticated the condition readily enough had the complete history been taken.

C. D. Holmes.

Giles, A. E., and Lockyer, C.: Ovarian Pregnancy.

Proc. Roy. Soc. Med., 1914, viii, Obst. & Gynec.
Sect., 10.

By Surg., Gynec. & Obst.

The authors present a case which appears without a doubt to be an ovarian pregnancy. The right tube and mesosalpinx were quite normal. The right ovary was enlarged and formed an oval sac about the size of a small hen's egg, of dark hue, the outer surface ragged. The sac showed no signs of laceration or rupture. The hæmatoma measured 1.5 in. by 2 in. and was everywhere surrounded by a capsule of ovarian substance. The center of the clot showed a transverse crescentic cleft, the walls of which had a smooth glistening lining. No sign of an embryo was discovered, but microscopic section revealed the following points:

r. The blood-clot was everywhere invested by a capsule of ovarian tissue, showing no break in its

ontinuity.

The central crescentic cleft was lined with fœtal membranes within which no embryo could be discovered.

3. Ramifying throughout the greater part of the laminated clot were seen degenerate chorionic villi of large size. Some villi appeared to be stout fibrotic strands of tissue devoid of an epithelial investment. Others had undergone vesicular change, and a few were surrounded by a calcareous deposit. There was no sign of active growth on the part of the syncytium, and Langhans' cells were not to be seen.

4. Decidual reaction was well demonstrated in the stroma of the medullary portion of the ovary

and also at the periphery.

Lutein cells lining the capsule of this growth were looked for, the assumption being that the gestation occurred within a ruptured corpus luteum. No lutein laminæ were found, however, and a few compact areas of large swollen connective-tissue cells seen at the periphery of the blood-clot were regarded as more probably of decidual than of lutein origin.

CAREY CULBERTSON.

Young, E. B.: The Emergencies of Extra-Uterine Pregnancy at the Boston City Hospital. Boston M. & S. J., 1915, clxxii, 131.

By Surg., Gynec. & Obst.

The author's paper was written after a study of 215 cases of extra-uterine pregnancy treated in the Boston City Hospital, but deals only with 62 real emergencies presenting symptoms of typical ectopic gestation.

Among these 62 cases there were 2 coincident extra- and intra-uterine pregnancies, 2 repeated extra-uterine pregnancies, and one twin pregnancy in a single tube. The ages of the women varied from 20 to 40 years—only one case occurring over 40 years and none under 20 years. Twelve women were primiparæ and 50 were multiparæ having had 1 to 5 pregnancies.

The site of rupture, as stated in 18 cases, was as follows: Isthmus, 11; central portion, 3; outer end,

4; the left tube was ruptured in 29 cases and the

right in 27.

The temperature of the 62 women varied between 98 and 100°, except 2 cases which entered the hospital with a temperature of 101.2 and 104.2° respectively.

The blood-count in 24 cases varied from 6,400 to 32,000 leukocytes, while the reds ranged from 3 to 4 million, except in one case in which there were 1,164,000 leukocytes with hæmoglobin below 40 per The hæmoglobin in most of the cases was around 60 per cent or less—occasionally 80 per cent.

The 60 cases, in which data was given concerning symptoms, show that prodromal signs were absent in only 25 per cent, and in 75 per cent they were of considerable duration and distinct enough to have attracted the attention of a physician, had one been consulted. Amenorrhœa was absent in something over 10 per cent of the cases; 44 per cent had flowing with pain; only 55 per cent complained of abdominal pain; 28 per cent had localized abdominal pain, which was invariably in the lower abdomen. The following conclusions are reached:

1. Exactly 50 per cent of the 62 cases studied

gave positive evidences of pregnancy.

2. Age seems to have no influence upon the occurrence or prognosis of extra-uterine pregnancy.

3. In over 50 per cent of cases the isthmus was definitely the seat of the implantation of the ovum.

4. About 50 per cent of the cases presented evidences of a previous infection of the genital tract, or at least an obstetric history suspicious in this respect.

5. About 50 per cent either had some actual abnormality or some point in their history which would make one suspicious that a pathological con-

dition might exist.

6. Among the 62 cases studied there were 3 tubal abortions, but there was nothing upon which to differentiate this condition from ruptured ectopic.

7. Rupture of an ectopic gestation is rare without premonitory symptoms; e.g., amenorrhœa, abnormal flow, etc.

8. The leukocytosis was high in the majority of cases and furnished little aid in differentiating ectopic from sepsis.

9. The temperature was not elevated to a degree sufficient to suggest inflammatory processes, except in those cases already infected at entrance.

10. Pelvic examination has given very little aid

in the diagnosis of ectopic.

II. Not a single case of this series was diagnosed

previous to rupture.

12. The total mortality of this series is 24.2 per cent. Omitting 3 cases that died of cerebral embolus, patent foramen ovale, and infection before admission, the true mortality is 19.3 per cent.

13. Intravenous infusion of saline is to be con-

demned, except in very rare instances.

14. Transfusion apparently has no advantage over the use of normal salt solution.

15. Delayed operation is advisable in some cases. immediate operation in others. Each case must be considered on its own merits. Habits of life, race. and previous history mean considerable in addition to a good physical examination. However, for those patients who are in a suitable physical condition, amid proper surroundings and in competent hands, immediate operation will always remain the proper HARVEY B. MATTHEWS.

# Gardiner, J.: Pituitary Extract in Marginal Placenta Prævia. Surg., Gynec. & Obst., 1915 xx, 84. By Surg., Gynec. & Obst

In a II-para the first symptom of the onset of labor was a sudden gush of blood which flooded the bed. With the patient in the Trendelenburg position, an examination revealed blood still oozing from the vulva. The cervix, dilated about four fingers, was relaxed and without much increase of hæmorrhage admitted of further distention. The perineum was also relaxed. One cubic centimeter of pituitary extract and one-sixth grain of morphia were administered hypodermatically. The head descended, checking the hæmorrhage, and eight minutes after the injection of the pituitary extract the child was born. Ten minutes later the placenta was expelled unassisted. There was no laceration of the cervix and the uterus was contracted to the size of a goose-egg.

### Fekete: Hysterotomy for Central Placenta Prævia (Durch Placenta prævia centralis bedingte Hyster-otomie). Zentralbl. f. Gynäk., 1914, xxxviii, 805. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In a case of central placenta prævia at the end of pregnancy, but before the beginning of pains, a very severe hæmorrhage took place after a vaginal examination, so that there was extreme anæmia after a few minutes. The bleeding stopped on tamponing. In order to avoid any further loss of blood, classical cæsarean section was performed after ligation of the arteries and extirpation of the uterus; there was no fever during convalescence.

The striking fact about the case was that during the severe hæmorrhage the pulse fell from 70 to 48 and then rose to over 100 after the infusion of salt solution. This bradycardia is caused, according to von Neusser's animal experiments, either by anæmia of the medulla oblongata and the irritation of the vagus center produced by it, or by decrease of the conductive capacity of the heart muscle.

RUHEMANN.

#### Dick, G. F. and G. R.: Bacteriologic Examination of the Urine in a Case of Eclampsia. J. Am. M. By Surg., Gynec. & Obst. Ass., lxiv, 1915, 145.

The patient from whom the urine was obtained was a woman 30 years old who was admitted to the obstetric ward of Cook County Hospital during the night of September 15, 1914. The patient was in convulsions when admitted and a forceps delivery was made during the night. When seen at 10 a.m. the following day she was still in a state of coma and showed marked cedema of the face and extremities. After admission she voided 3 ounces of urine. She died about twenty hours after delivery. With aseptic precautions a specimen of urine was obtained by catheter. It measured 15 ccm., was turbid and smoky, and contained a large amount of albumin, with numerous coarsely granular casts, many red blood-cells, some polymorphonuclears, spherical pear-shaped and tailed epithelial cells.

Aërobic cultures on blood-ascites-agar showed no growth. Anaërobic cultures on the same medium and dextrose-agar shake-cultures showed many slowly growing colonies, which were visible on the third day. They consisted of gram-negative bacilli about the size of influenza organisms. They grew anaërobically only, forming pin-point transparent colonies on blood-agar without affecting the blood. In twenty-four-hour cultures they were sluggishly motile. Satisfactory growths on the ordinary mediums were not obtained.

The intravenous injection of the organisms from ten blood-agar slants produced no apparent result

in a small dog.

In one of the agar shake-cultures there developed a single colony of gram-positive short-chained streptococci which did not grow in transfer.

Similar cultures of catheterized specimens of urine from normal puerperal women gave, in one case, entirely negative results; in a second case, a

few colonies of staphylococcus.

Little can be said concerning the significance of the organisms described. In a number of nephritic urines, organisms have been found resembling those cultivated from the urine of the case of eclampsia, and it seems that the results described indicate that the infectious theory of eclampsia is still worthy of consideration.

EDWARD L. CORNELL.

#### Hogan, J. J.: Pregnancy Toxæmias: Their Etiology and Treatment. Calif. St. J. Med., 1915, xiii, 50. By Surg., Gynec. & Obst.

In this paper the author discusses in a general way the problem presented by the pregnancy toxemias, gives his views in regard to a rational method of determining the degree of the toxemia, and suggests his line of treatment for this condition.

The pregnancy toxemias are doubtless caused by the presence in the circulation of some unknown toxic agent, for we find in them similar definite tissue changes in such organs as the kidneys, liver, and brain, as are produced by such toxic drugs as chloroform, alcohol, phosphorus, etc. The signs and symptoms of this condition can be explained best on the assumption that where nausea, vomiting, drowsiness, and convulsions are present the brain is especially involved; diminished urinary secretion, albumin, and casts when the kidney has been the seat of greatest damage, etc.

Proper urinary examination will show early signs of beginning trouble by an increase in acidity, a

lowered output of bases, the presence of some of the ketone group, acetone, and diacetic acid. The trouble is not so much that these substances are not excreted by the kidneys, but that their mere presence in the tissues produces the definite pathological conditions beginning with cedema and ending, if not relieved, in necrosis. Since these toxins are amides of fatty acids it is very essential that we recognize an early urinary acid intoxication and attempt to reverse the conditions causing the tissue cedema, for the chances of reversing a later condition of necrosis are nil.

For determining the relative degree of acidity he uses three indicators with the following composition and arrangement:

 I. Para nitro phenol
 0.2 Alcaline (lemon yellow)

 Alcohol
 100.0 Acid (colorless)

 2. Methyl red
 0.2 Alkaline (yellow)

 Alcohol
 100.0 Acid (red)

 3. Rosolic acid
 0.5 Dissolve in alcohol
 50.0 Then add distilled water
 Alkaline (pink)

 Acid (no change)
 50.0 Alkaline
 50.0 Acid (no change)

If the acid is indicated by the first of these reagents there is a hundredfold increase, while if indicated by the second it shows a tenfold increase. Patients treated with alkalines or having bladder infections are the only ones usually reacting alkaline to rosolic acid.

To diagnose an acid intoxication it is also essential to know if an increased quantity of bases is being excreted. Here he uses Mohr's method for the determination of chlorides. If there is a decrease in chlorides in such cases, it means that proteins are being broken down into ammonia to neutralize the effects of increased acid production. So that it is necessary to determine in these cases the exact ammonia output from time to time. He uses here a method of titration with formalin and neutral potassium oxalate.

In his method of treatment he injects intravenously an alkaline solution of NaCl 28, Na<sub>2</sub> CO<sub>3</sub> 20, and fresh distilled water 2000, at the same time giving per rectum by the drop method dextrose (anhydrous) 100 and distilled water 500.

C. D. HOLMES.

# Miller, H. A.: Indications for Cæsarean Section. Penn. M. J., 1915, xviii, 294.

By Surg., Gynec. & Obst.

Miller gives as indications for cæsarean section the following:

1. Maternal indications: (1) Placenta prævia, (2) eclampsia, (3) atresia of the vagina, (4) heart lesions—decompensation, (5) previous cæsarean section, (6) senile uterus, (7) elderly primiparæ, and (8) physically unfit.

2. Fatal indications: (1) Contracted pelvis—C. V., 7.5 to 8 cm., or less; (2) abnormal presentation—O. P., impacted face, transverse, etc.; (3) prolapsed cord; and (4) non-engagement of floating head—where high forceps or version is the only alternative.

The complications incident to cæsarean section,

which must be considered in contrast to those which are avoided by it, are the following:

1. Shock in cæsarean section is comparatively less severe than in other operations of equal gravity.

- 2. Post-operative hæmorrhage is occasionally troublesome, particularly when the uterine incision is through the placental site.
- 3. Infection should not be any more frequent than in other abdominal operations.
- 4. Acute dilatation of the stomach occurs in about 9 per cent of cases, which is more frequent than in ordinary abdominal operations.
- 5. Acute dilatation of the heart may occur, particularly if chronic disease of the heart muscle be present.
- Rupture of the uterus in cases of repeated cæsarean sections must be kept in mind.
- 7. Adhesions, no doubt, frequently occur following cæsarean operations and are in direct relation to the vaginal manipulation previous to operation.

8. Uterine fistula and herniæ.

In contradistinction to the complications incident to the cæsarean operation, the following are avoided by its performance: (1) lacerations of the cervix, (2) perineal and vaginal tears, (3) sacro-iliac disturbances, (4) injury to the coccyx, (5) nervous collapse, and (6) infantile mortality and morbidity.

HARVEY B. MATTHEWS.

Davis, E. P.: Cæsarean Section. Penn. M. J., 1915, xviii, 292. By Surg., Gynec. & Obst.

In discussing cæsarean sections Davis regards them from two points of view: those operations which have been proved by experience to be right, and those which are more recent and still on trial.

In the first class belongs the classical cæsarean section, which is the most frequently performed and applicable to the greatest number of clean cases.

In the second class we have the so-called extraperitoneal cæsarean section, in which the child is delivered through a peritoneal fistula. Experience has shown the author that in the delivery of the child the peritoneal sac is often opened, which defeats the purpose of this method of cæsareanization. Furthermore, the adherents of the extraperitoneal operation claim that in septic cases this fistula may be left open for drainage and that by this means the sacrifice of the septic uterus may be avoided. This method, the author states, is not sufficiently impressive to warrant its adoption over the classical cæsarean section.

In 129 cæsarean operations the author only lost one mother—a maternal mortality of 0.76 per cent; there was no fætal mortality. The maternal morbidity consisted of a few cases of tardy closure of the abdominal wound—no hernia developed. There were also 35 infected cases operated upon with 11 maternal deaths, a mortality of 31 per cent.

The indications for which operation was done are:
(1) contracted pelvis, (2) excessive fœtal size, (3) threatened uterine rupture, (4) pelvic tumors complicating labor, (5) rupture of the uterus, (6) physio-

logical incompetence of labor, (7) separation of normally implanted placenta, (8) placenta prævia, (9) septic infection, and (10) uterine rupture and eclampsia.

In suspected cases the author does not remove the uterus, but, after removal of the contents, irrigates its cavity thoroughly and packs it with 10 per cent iodoform gauze brought through the cervix. This gauze is removed in 48 hours.

In infected cases the Porro operation with clamps, leaving the stump outside at the lower end of the abdominal incision, is the operation of choice.

Davis considers placenta prævia a variety of ectopic gestation, and thinks it should receive the same treatment as ectopic gestation within the pelvis. He has performed abdominal cæsarean section of the classical type on 18 cases of placenta prævia without a maternal death. Fætal mortality has been 40 per cent.

HARVEY B. MATTHEWS.

Recasens, S.: The Total Extirpation of the Uterus to Replace Cæsarean Section in Infected Cases (Die totale Gebärmutterabtragung als Ersatz für den Kaiserschnitt in Fällen von Infektion). Zentralbl. f. Gynäk., 1914, xxxviii, 1265.

By Surg., Gynec. & Obst.

The author discusses the measures which should be taken to terminate labor in cases of contracted pelvis in which infection has taken place. Cæsarean section is generally excluded. Extraperitoneal cæsarean section is likewise excluded, although Frank, Veit, Sellheim, Latzko, and Döderlein advocated its employment some time ago. The contra-indications for the latter are likewise the contra-indications for the former. The same may be said of pubiotomy as advocated by Bumm or Döderlein. Craniotomy on the living is unscientific, and temporizing until the child is dead to perform a craniotomy does not relieve one of responsibility.

The author advocates the removal of the uterus in toto before opening it. He says that this can be accomplished within a few minutes, the mass then being taken into another room by an assistant and the necessary measures for resuscitation employed. The operation is very much simplified by the employment of the Wertheim forceps. The author employed the procedure successfully in two cases, one in which a cancer of the cervix complicated the pregnancy and one in which an injection with a temperature of ro3° to ro4° had taken place. In both cases the children were resuscitated easily and in both the post-operative course became normal within 24 hours.

L. A. Juhnke.

Barfurth, W.: Bacteriological Content of the Fœtus in Abortion and Premature Delivery (Über den Keimgehalt von Föten bei Abort und Frühgeburt). Beitr. z. Klin. d. Infektionskr. u. z. Immunitätsforsch., 1914, iii, 327.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

At Schottmüller's clinic during 1913, bacteriological examination of the fœtus was made in 100 cases GOLDSCHMIDT.

among 760 cases of abortion and premature delivery. Only certain cases were selected. All that were changed by secondary decomposition or injured in the course of delivery were rejected.

In 24 of these 100 cases there were positive results. The remainder of the cultures were sterile. It was found that only a certain per cent of fœtuses are infected in abortion, and that the transference of germs from the mother, where they have already manifested themselves by fever, only takes place under certain conditions. The placenta plays a very important part in this.

In the fœtal circulation, Barfurth found chiefly colon bacilli and bacillus emphysematosus, since it seems to be characteristic of the gas-forming bacilli to be able to produce the injuries necessary to

penetration.

Gillespie, W.: Abortion, with Special Reference to Its Medicolegal Aspects. Lancet-Clin., 1915, cxiii, 97. By Surg., Gynec. & Obst.

The author acknowledges that the aspects of this subject are varied and its problems most diverse. The physician is the only competent judge in many cases relating to abortion, and therefore the courts, by conceding this fact, place upon the profession a responsibility which should be recognized by an endeavor to conscientiously weigh every fact that

bears upon this subject.

Threatened abortion, whether criminal or otherwise, should receive the best prophylactic care that is possible before interference is resorted to. Many seemingly inevitable abortions might result in the preservation of the ovum if intelligent means were persistently employed. When there is any doubt as to the proper line of procedure, particularly as regards criminal attempts at abortion, counsel should be called. The profession, as a whole, the author believes, is too much inclined to protect patients from the results of their own folly and assume risks to their own reputation too lightly.

Among the legitimate indications for abortion

the following are given:

r. Organic cardiac disease, of which three types are mentioned: (a) those in which a failure of compensation preceded the pregnancy; (b) those in which decompensation occurred during the last half of pregnancy; and (c) those in which decompensation occurred post-partum.

2. Graves' disease—if the pregnancy markedly aggravates the condition. Many stand pregnancy and labor well; therefore, counsel may be necessary

before therapeutic abortion is done.

3. Excessive nausea of pregnancy, with or without the supervention of jaundice.

4. Excessive persistent jaundice or albuminuria.

5. Acute yellow atrophy of the liver.

6. Nephritis — acute or chronic — when diet and rest in bed fail to bring about improvement.

Tuberculosis — laryngeal and pulmonary.
 Uterine cancer — this indicates hysterectomy, not abortion.

Furthermore, in the author's opinion, uterine fibroids can hardly be regarded as an indication for abortion. The test of labor or cæsarean section, followed by hysterectomy, promises better results for the risks assumed than abortion. The same is true of deformed pelves, for induced premature labor or elective cæsarean section offers far better results than abortion.

Medicolegally, the following questions are im-

portant:

1. How shall the practitioner, when called in a case of criminal abortion, protect himself from suspicion of complicity in the crime?

2. In case of rape, if pregnancy occurs, should the woman be expected to assume the same legal attitude toward the child as a mother who has voluntarily taken the chance of being impregnated?

3. Can a therapeutic abortion be done, after two physicians have agreed upon its necessity, for a condition that would ultimately shorten the mother's life, but whose life is not in immediate danger?

4. Should the concurrence of any two physicians be sufficient in law to warrant an abortion, or should special knowledge on their part be required?

5. What is the legal status of the man who attempts to produce abortion in a woman not pregnant? Morally, the crime lies in the intent, but how would the courts view the matter?

6. If an abortionist attempts to end a pregnancy and the growing ovum is within the tube (ectopic), would the courts hold that he had attempted to destroy life and, therefore, consider him responsible?

7. If in either of the last two cases cited the attempted abortion results in a fatal sepsis, upon what charge would the culprit be indicted?

8. Are we, as physicians, debarred from giving information which might assist in the prevention of conception in cases where the occurrence of pregnancy would be dangerous to the woman?

HARVEY B. MATHEWS.

Hoehne, O.: Febrile Abortion (Zur Frage des fieberhaften Abortes). Jahresk. f. ärzil. Fortbild., 1914, v, 18.

By Zentralbl, f. d. ges. Gynäk, u. Geburtsh, s. d. Grenzgeb.

The number of normal and premature deliveries in the polyclinic at Kiel has barely doubled, but the number of abortions has almost tripled. The percentage of febrile cases has increased from one-sixth to one-third. Severe cases and deaths have become more frequent. Of 1137 abortion cases, 31.8 per cent were febrile; 41.7 per cent were complicated with peri- and para-uterine infections. The mortality of the febrile cases was 11.6 per cent; that of the complicated abortions 27.8 per cent. The mortality of all the abortions, including the afebrile ones, was 3.69 per cent.

The bacteriological findings were the same in the complicated and fatal cases as in those which ended in recovery, the bacteria found being hæmolytic and non-hæmolytic streptococci, staphylococci,

and colon bacilli.

The fatal febrile abortions were either criminal or treated by active delivery. In the complicated febrile abortions which ended in recovery the

course was generally spontaneous.

As a matter of course, a complicated abortion should not be treated actively, unless active hæmorrhage makes it necessary. All the fourteen septicæmic cases died. Hæmolytic streptococci were most frequently found, and in the 20 cases that died of peritonitis they played the chief part. The fear of hæmolytic streptococci is justified. Threatening peritonitis can be prevented by the injection of camphorated oil.

The author's own experience with expectant treatment, even in uncomplicated febrile abortions, was very good, but he does not feel justified in pronouncing final judgment in regard to it. He believes that the only way to secure good results in injuries of the uterus is to operate.

Benthin.

Stevens, T. G.: Antepartum Hæmorrhage. Clin. J., 1915, xliv, 17. By Surg., Gynec. & Obst.

Stevens frankly states at the outset that there are few cases in the whole range of obstetrics which give more reason for anxiety than those cases of serious antepartum hæmorrhage, particularly con-

cealed accidental hæmorrhage.

Antepartum hæmorrhage may be (1) accidental or (2) unavoidable. Furthermore, there may be external accidental hæmorrhage when the blood passes between the membranes and uterine wall and escapes through the cervix, or there may be concealed hæmorrhage when the blood is retained between the membranes and uterine wall or between the placenta and uterine wall.

The common causes of these accidents are: (1) oft-repeated pregnancies, (2) poor general health in middle-aged women, and (3) albuminuria, which

usually clears up after delivery.

The patient usually connects the hæmorrhage with some form of trauma, but Stevens does not believe that such circumstances bear any direct relationship to the separation of the placenta. On the contrary, the initial factor is a small hæmorrhage between the placenta and uterine wall, slight uterine contractions being thereby set up and gradually more and more blood is squeezed out, separating more and

more of the placenta.

Furthermore, attention is called to the frequency with which hæmorrhage into the uterine muscle occurs in these cases of accidental hæmorrhage. Post-mortem examination shows the uterine muscle to be absolutely infiltrated with blood, and occasionally blood from this situation may be forced through into the peritoneal cavity or into the parametrial tissues. The explanation of this intramuscular hæmorrhage has not been satisfactorily given, but the author believes it to be a manifestation of a profound toxemia, allied to that which causes eclampsia, albuminuria, and the pernicious vomiting of pregnancy. The local condition of the uterus most conducive to this state of affairs is a

chronic metritis; i.e., fibrosis uteri—the hard, straight, "poker-like" uterus occurring in women who have had several children and who suffer from backache, leucorrhœa, and menorrhagia.

The relation of the uterine contractions to the severity of the hæmorrhage is of considerable clinical interest. There are always two factors concerned in checking uterine hæmorrhage: (1) uterine contractions and (2) coagulation of the blood. Firm uterine contraction and retraction close the blood-vessels and stop the hæmorrhage. If there are no uterine contractions, the torn blood-vessels cannot be compressed, and therefore profuse hæmorrhage results. Concealed accidental hæmorrhage is the worst, most dangerous, and most fatal accident which can happen to a pregnant woman. This form of hæmorrhage is probably due to the fact that the infiltrated uterine muscle becomes paralyzed; consequently, stimuli which ordinarily would cause contraction of the muscle fails. The stimulation of uterine contractions is of the utmost importance in these cases.

Regarding the treatment of moderate accidental hæmorrhage and placenta prævia, the author advises two definite methods: (1) rupturing the membranes artificially, applying a tight abdominal binder, and giving pituitary extract; (2) the Dublin plugging method, which consists of plugging the vagina and applying a tight binder to crowd the uterus down against the vaginal plug. These methods are only applicable when the cervix is not dilated and the membranes are not ruptured and, therefore, have a very limited applicability. However, if the cervix is dilated to the size of half a crown, bipolar version could be taken advantage of, thus allowing the uterus to expel the child, after, perhaps, the administration of a small dose of pituitary extract.

In cases of very severe accidental hæmorrhage, including the concealed variety, where the patient is in a desperate condition from loss of blood and from shock, it is often difficult to determine what to do. All ordinary methods have either failed or the desperate condition of the patient will not warrant the trial of an uncertain procedure. In such cases the author believes surgery offers the best relief. Surgically there are two possibilities: (1) cæsarean section and (2) hysterectomy. The first of these, the author believes, is not the operation of election. because it cannot be done without further loss of blood, which naturally renders the condition more grave. Hysterectory, he believes, is the operation of choice. By removing the uterus, without interfering with its contents, the patient will lose only a very small quantity of blood - carefully done a negligible amount - and this cannot positively be said of any other operation.

In performing hysterectomy in these desperate cases, the following precautions are advised:

Saline infusion while doing the operation.
 Small quantity of general anæsthesia combined with local anæsthesia of the abdominal wall.

Hysterectomy done with these precautions is very

safe and should be done in about twenty-five minutes, leaving the patient in no worse condition

than at the beginning of the operation.

In mild cases of placenta prævia there are two methods of procedure: viz., (1) bipolar version, with slow extraction of the breech, and (2) the use of the Champetier de Ribes bag method, because it gives the child a better chance.

For the very desperate cases hysterectomy, as for concealed accidental hæmorrhage, is the only treatment that will stop the hæmorrhage effectually

without further loss of blood.

HARVEY B. MATTHEWS

Berecz: Carcinoma and Pregnancy; Cæsarean Section; Wertheim's Operation (Carcinom und Gravidität; Sectio cæsarea; Wertheim'sche Operation). Zentralbl. f. Gynäk., 1914, xxxviii, 804.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

When pregnancy is complicated by carcinoma the first thing to be considered is the saving of the mother's life; in operable cases, therefore, the radical operation should be performed without any consideration for the child. In inoperable cases an attempt should be made to save the child, so it is best to wait until the end of pregnancy and deliver the child either by the natural route or by cæsarean section.

Berecz reports a case of an X-para with carcinoma of the cervix, who came to the clinic at the end of pregnancy. Laparotomy was performed, the uterus was exposed, and the arteries ligated after slight dissection of the ureters. A classical cæsarean section was then performed, with absolute hæmostasis. The child was apnæic, but soon recovered. A typical Wertheim's radical operation was added. The patient was discharged with the child on the twenty-second day, but after six weeks she came back for preventive radium treatment.

RUHEMANN.

Bauereisen, A.: Pyelitis Gravidarum (Über Pyelitis gravidarum). *Jahresk. f. ärztl. Fortbild.*, 1914, v, 27. By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The most frequent causes of pyelitis gravidarum are the colon bacilli, more rarely the pyogenic cocci, gonococci, pneumococci, Friedländer's bacilli, and proteus. The mucous membrane of the urinary organs can be affected only if it is injured. The bacteria generally cannot ascend unless there is urinary stasis beforehand. The causes of dilatation of the ureter are not uniform. Pressure on the gravid uterus or pressure of the head on the pelvic inlet may be causes. According to Stoeckel, the point of stenosis is generally just beneath the middle Schwalbe spindle. Other factors that lead to stasis of the urine in pregnancy are swelling of the mucosa of the ureter, distortion of the bladder, and the tortuous course of the ureter. In some cases there is no doubt that the infection is hæmatogenous: lymphatic infection is rare. Urinary infection in childhood may last until after puberty,

but in the majority of cases this explanation is untenable.

The symptoms may vary. The usual ones are pain on pressure, nausea, vomiting, chills, and fever. The mild cases with urinary stasis without infection and the moderately severe ones with infection show very favorable prognosis under proper treatment, if they are colon infections. Infection with pyogenic bacteria is more severe. As cystitis is not necessarily present, there are no bladder symptoms. Catheterization of the ureter is necessary for diagnosis. Differential diagnosis is necessary from infectious gastro-intestinal diseases, pneumonia with acute onset with fever, and, especially, appendicitis. Errors may be avoided by palpation of the kidney, examination of the urine, bladder, and ureters. In mild cases, sometimes catheterization of the ureters performed for diagnostic purposes is followed by recovery. A rest in bed and diet complete the cure. If cystoscopy shows bacteria and pus in the kidney pelvis, the kidney pelvis must be irrigated.

Artificial interruption of the pregnancy is not necessary. The success of the treatment depends on early diagnosis. In cases that have not been seen soon enough, nephrotomy or nephrectomy may be necessary.

BENTHIN.

#### LABOR AND ITS COMPLICATIONS

Ranken, J. F.: The Management of Occipitoposterior Presentations. N. Am. J. Homwop., 1915, xxx, 19. By Surg., Gynec. & Obst.

The occipitoposterior presentation occurs in 25 per cent of the vertex presentations, but 90 per cent of these rotate spontaneously to an anterior position. Delivery in the posterior position is slow because the expelling forces act at a disadvantage and the perineum is more likely to be ruptured. This malposition is due to deficient flexion of the

fœtal head and to pelvic deformities.

The diagnosis of this condition can usually be made by external abdominal examination. Under treatment the author suggests alternating the Walcher position with the lateral or lateroprone position, the hips being elevated on the side toward which the occiput points. This will assist the position to right itself, after which the usual methods of procedure for normal delivery may be followed. Forceps are to be used in bringing about the proper anterior rotation only with extreme care.

C. D. Holmes.

Cathala, V.: Dystocia Due to Fixation of the Isthmus (Accouchements dystociques dus à une hytéropexie isthmique). Bull. Soc. d'obst. et de gynéc.; Par., 1914, iii, 396.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

A 38-year-old woman had had one normal delivery, and on account of prolapse of the uterus a ventrofixation of the isthmus of the uterus was performed. After this there were five pathological

deliveries with a dead child in each case. The deliveries lasted from twelve hours to three days; three of them were breech presentations, one a shoulder, and one a face presentation. At last cæsarean section was performed and a living child delivered.

The author believes that these pathological conditions may have been caused by fixation of the isthmus in the earlier operation, so that dilatation of the cervix was rendered difficult. Therefore, operations that fix the isthmus should be avoided in the child-bearing age, just as ventrofixation of the body of the uterus is.

Keller.

#### McDuffie, M. W.: Painless Childbirth; Normal Versus Artificial. N. Am. J. Homæop., 1915, xxx, 1. By Surg., Gynec. & Obst.

The author takes the position that as childbearing is essential to the complete physical and mental health of women it ought to be as painless as are the normal functions of heart, stomach, bladder, etc., and that painful childbirth is pathological.

To bring about complete preparation for painless childbirth mothers should teach their daughters how to develop and preserve their physical, mental, and moral powers. Deformities of the pelvis, etc., should rule out a consideration of pregnancy. Great care should be exercised as to the hygiene of the woman during gestation and labor. A diet consisting largely of fruits and fruit juices should be followed, and the patient should avoid all meats, bread, and milk. Overeating, too, should be carefully guarded against, as well as the use of too highly seasoned foods, stimulating drinks, etc.

Artificial painless childbirth by the twilight-sleep method has its place, but is usually necessary only when the physician has neglected those means at his hand which would in themselves render childbirth painless.

C. D. Holmes.

# Hellman, A. M.: Painless Childbirth in France; a Note on the Use of Tocanalgine. Am. J. Surg., 1915, xxix, 9. By Surg., Gynec. & Obst.

The author reviews briefly the report made by Dessaignes in 1914 upon the use of tocanalgine in 112 cases. This drug, which is obtained by the action of living ferments on the chlorhydrate of morphine, exerts its effect upon the nerve-centers and pain disappears in from 3 to 15 minutes after administration. Eighty-four of the 112 patients had complete analgesia. Twenty-four required but one dose. Four patients were refractory to the drug. The length of the analgesia varies from 30 minutes to 12 hours. No ill effects were suffered by the mothers. The first stage was usually shortened. Twenty-eight of the babies were born in a dazed condition but easily responded to the usual treatment. One child died during labor while 77 of the babies cried out at once upon delivery.

Hellman reports three cases, all primiparæ, two of whom were entirely relieved of their pain; the other was partially relieved. No untoward symptoms developed, but in the opinion of the writer the second stage was prolonged in all the patients. The first dose given was 1.5 ccm. and subsequent dosage varied from 0.5 to .75 ccm., administered by injection. WILLIAM H. CARY.

#### Junor, K. F.: Twilight Sleep in the Home. Med. Rec., 1915, lxxxvii, 146. By Surg., Gynec. & Obst.

The treatment of labor indicated in this article cannot be properly called sleep, but is simply "painless labor" with consciousness.

Junor feels, however, that in any procedure the less you interfere with nature, the closer you approach to true science. The Freiburg method involves fairly deep narcosis and amnesia. Junor's method involves neither, and yet secures painlessness. By the introduction of the sulphate of sparteine, the surest and safest heart tonic and diuretic known to medicine, not only are these powerful cerebral effects avoided, but the blood circulation (on the vigor of which, especially at such a time, the life of both mother and child absolutely depends) is stimulated to such a degree as to secure continuous and permanent vitality in both.

This seems ideal labor. There is one item of treatment which may not seem of much moment, but which is of the utmost importance; namely, the administration of a suitable dose of castor oil daily for two weeks previous to labor.

The technique is very simple, but the drugs must be absolutely pure. Junor uses those put up in glass ampules. The doses may vary according to the effect desired. The treatment should begin when the os is between two and three fingers open. Everything should be done as quietly as possible of course. The first dose given consists of scopolamine 1.5 ccm., narcophin 1 ccm., sparteine sulphate 1 gr. Watching the effect of these doses on the patient's pulse and condition the size and frequency of future doses can be gauged easily. After that, at intervals of three-quarters of an hour to one hour, .5 ccm. of scopolamine is injected, and at intervals of two hours 1 gr. of sparteine sulphate, till labor is finished.

Of course all the necessary preparations for the labor as to other organic conditions must be known, as the condition of the kidneys, etc.

# Scadron, S. J.: Dämmerschlaf (Twilight Sleep). Interst. M. J., 1915, xxii, 16.

By Surg., Gynec. & Obst.

In a series of over 200 cases at the Jewish Maternity Hospital (New York) the author used the following technique: Treatment is begun when the patient is in active labor, having regular intermittent uterine contractions at intervals of about five minutes, and lasting from one-half to one minute, with the cervix sufficiently dilated to admit two to three fingers. The initial dose consists of scopolamine hydrobromic 1/133 of a grain, with 1 ccm. of a 3 per cent solution of narcophine. One hour later, a

second dose of scopolamine 1/400 of a grain is given. Half an hour later the memory test is applied. If her memory is clear and she is not under the influence. a third dose of 1/400 grain is given. If, however, the patient is in a mental state of amnesia, the injection is not given until one hour after the second dose. The amount of amnesia present is then used as a guide for repeated injections, but the dose of scopolamine is not more than 1/400 of a grain given at intervals of one to one and a half hours. Narcophin is not repeated except in rare instances.

The author's results were complete amnesia in 83 per cent of cases, analgesia in 8.7 per cent, and in 8.3 per cent the drug had no effect. The operative interferences in this series were four medium forceps, eighteen low forceps, and two breech extractions. The number of perineal lacerations was reduced. On the part of the child, he found that of the series 168 cried spontaneously; there were 30 children born with some degree of oligopnæa. The average delay for the vigorous cry of the infant was about five minutes. There were 4 asphyxiated children; 5 died during the first 24 hours; and one was stillborn case of hydramnion. The causes in these cases were definitely determined, and in no way could be attributed to scopolamine.

Scadron states that the only contra-indication against this method is primary inertia, and offers the

following conclusions:

Success means when the memory of the event of labor is lost, and depends on the employment of the proper technique and the administration of standard solutions. Treatment must begin when the patient is in active labor, and should not be employed in short labors. Perineal lacerations are diminished and there is less tendency to post-partum hæmorrhage. The puerperium is unaffected and patients convalesce normally. The patient must be under the constant care of a trained nurse, and the fœtal heart frequently observed, especially at the end of the The daily systematic exercises and second stage. the early rising have a tendency to lessen uterine displacements and greatly aid involution. From his observations he thinks the treatment has no untoward effect on the mother or child and advises all medical men interested in obstetrics to give it a fair WILLIAM D. PHILLIPS.

### Smith, J. T., Jr.: Scopolamine Amnesia in Labor. cleveland M. J., 1915, xiv, 43. By Surg., Gynec. & Obst.

In this series of 35 cases the method of Gauss was followed, except that Smith found a larger initial dose desirable, the dose of morphine being 1/6 gr., and that of scopolamine 1/100 gr. In 5 cases only was the morphine repeated. The maximum number of injections was four. The author thinks that the second stage of the labor was lengthened. As compared with 200 average primipara labors the time of the entire labor was increased two hours. After labor a few of the children were oligopnæic for several hours. · WILLIAM H. CARY.

Rongy, A. J.: The Use of Scopolamine in Labor. Am. Med., 1915, x, 45. By Surg., Gynec. & Obst.

It is certainly most unfortunate that the first comprehensive descriptions in this country of this form of treatment appeared in the lay publications. for not only did it create a strong prejudice against it within the medical profession, but it also tended to reflect upon the professional reputations of such eminent scientists as Krönig and Gauss, who, after most painstaking efforts extending over a period of eight years, have succeeded in developing an accurate and well-defined technique in the administration of scopolamine-morphine in connection with

The profession has invariably proved itself equal to all occasions and, in this instance, it is to be regretted that a number of the foremost obstetricians were unduly hasty in expressing their opinion of this method through rather unusual channels without thorough investigation. A legitimate amount of conservatism is absolutely essential on the part of the medical profession, so that a proper equilibrium may be obtained and the public be protected against the results of over-enthusiasm.

Scopolamine is passing through the same process of evolution common to all new methods of treatment. It is but natural to expect, at this day, that a great deal of opposition should arise against it. Not only is it condemned by those who think that they have had some experience, but even by those who have made no attempt to give this method a

fair trial.

A study of the literature reveals the fact that there are two distinct groups opposing this method of treatment: (1) those who have tried the method occasionally, based upon no definite technique, with results correspondingly unfavorable; (2) those who have given this method a fair trial, but have not followed the technique as outlined by Krönig and

In introducing this treatment the object was not only to study the scientific aspect of it, but also to ascertain whether or not the benefits derived by the patient, even should the treatment result successfully, were commensurate with the special care and effort so necessary on the part of those in attendance. In forming conclusions, the opinions of patients, especially the more intelligent ones, were taken into consideration. They nearly all agreed that this form of treatment robs labor of its agonies, creates an improved mental attitude, and instills within the patient a feeling of confidence, so much so that the anxiety of labor is eliminated.

At this juncture it would even be speculative to suggest that this form of treatment may have a prenatal influence upon the child. If it be true that prenatal influences have a direct bearing upon the child, then surely an improved mental state on the part of the mother is not only most desirable, but

essential.

An argument very often advanced against this treatment is that if labor is to be made painless a

physiological process is interfered with. Many further contend that the mother will lack the tender feelings for her child and that the dignity of motherhood will eventually suffer. It is questionable whether or not the pain accompanying labor is entirely physiological. May it not be one of the relics left by ancestors?

The action of scopolamine is chiefly upon the central nervous system. It quiets the cerebrum and diminishes the perception of pain, without apparently influencing the contractility of the uterus. Labor, therefore, may progress uninterruptedly and the patient may not only fail to recollect these pains, but may even be entirely unaware of them.

In the cases reported by the author, the technique of Gauss and Krönig was carefully followed. Six typical cases are reported.

In 220 consecutive cases the following results were obtained: (1) in 183 cases, or 83.5 per cent, there was complete amnesia with analgesia; (2) in 17 cases, or 7.5 per cent, there was analgesia without amnesia; (3) in 21 cases, or 10 per cent, the treatment failed to produce the desired effects.

This treatment renders the pain less intense and apparently of shorter duration, for it is only the acme of the pain that the patient is probably conscious of. If closely observed, there is no alteration in the actual time of uterine contractions. Apparently the intervals between pains are lengthened, but in reality they are about the same. The outward manifestations of pain, such as facial expression and outcry, are markedly diminished.

The average duration of labor in the series cited in primiparæ was 8.5 hours, figuring from the time of admission to delivery. The average time that the patient was under the influence of scopolamine was 6.5 hours. The longest period that a patient was kept under was 29 hours, the shortest 1.5 hours. The average number of injections was 5; the highest number 18, the lowest 1.

The author believes that the first stage of labor is actually shortened. This is most likely due to the softening effect that narcophin and scopolamine have upon the cervix and lower uterine segment. The second stage, however, is positively delayed. The patient, being in a semiconscious state, does not utilize her abdominal muscles to any great advantage. No appreciable alteration in the amount of hæmorrhage was noticed.

The second stage being somewhat delayed, stretching of the perineum is more gradual and lacerations are, therefore, less likely to occur.

One hundred and eighty-six babies, or 84.5 per cent, cried spontaneously. There were 34 cases, or 15.5 per cent, in which oligopnæa was present in varying degrees. The total infant mortality was six deaths, or 2.7 per cent. One was a premature infant with spina bifida. The second died from melana neonatorum; the third from subdural hæmorrhage; the fourth from ædema of the glottis twelve hours after delivery; the fifth was from congenital transposition of the viscera; the direct cause of the

sixth was unknown; however, in this case, the mother received an overdose of narcophin.

In this series, labor had to be terminated artificially in 23 cases, or 10.5 per cent. In two cases of breech presentation, delivery was accomplished by bringing down a foot. In 21 cases forceps were used; of these, 3 were medium and 18 low. One case was a nephritic with marked œdema and it was deemed advisable to terminate labor quickly. In 3 cases the use of forceps was indicated because of persistent occipitoposterior positions. In one case labor was terminated because of an existing severe cardiac condition. In 3 cases labor was prolonged, the fœtal head apparently meeting with some obstruction at the pelvic outlet. In 13 cases labor was terminated on account of a tedious second stage. In the lastmentioned cases the perineum was bulging with the caput showing, and practically all that was necessary was extension of the head with the forceps blades. The instruments were then removed and labor allowed to terminate spontaneously.

It is interesting to note how little the patients were physically affected by labor. The exhaustion usually accompanying labor in primiparæ was entirely eliminated. They usually appeared very restless the following day for, instead of having passed the previous day in pain and wakefulness, they had gone through labor in a state of semiconsciousness without any undue physical exertion. There were 163 primiparæ in the series, and this treatment seems best suited to first labors.

The author's conclusions are:

1. Standard solutions are absolutely essential for the success of this treatment.

2. No routine method of treatment should be adopted. Each patient should be individualized. This method does not merely consist of repeated injections of scopolamine at prescribed intervals, but the mental state of the patient should be made the guiding point. A subconscious state must be evenly maintained.

3. Facilities should be such that the patient will not be unduly disturbed.

4. A nurse or physician must be in constant attendance.

5. This form of treatment is best carried out in hospitals, although there is no reason why it cannot be accomplished in well-regulated private homes. However, if for any reason the physician attending a patient at her home does not see fit to institute treatment early in labor, he surely can utilize this method in the second stage and still save the woman a great deal of unnecessary pain. That this may be accomplished was demonstrated in eight cases in which treatment was instituted at the end of the first stage of labor. All of these cases had marked analgesia with complete amnesia.

6. It does not affect the first stage of labor, but

the second stage is somewhat prolonged.

7. Pain is markedly diminished in all cases, while amnesia is present in the greatest number of patients, and labor is not painless as is generally supposed.

8. This treatment does not in any way interfere with any other therapeutic measures which may be deemed necessary for the termination of labor.

Fœtal heart sounds must be carefully watched.
 Sudden slowing calls for immediate delivery, if pos-

sible, or treatment must be discontinued.

10. Oligopnœa was present in 15.5 per cent of cases; however, normal respiration was very soon established and no ill effects were observed.

11. No change in the course of the puerperium was observed, and convalescence progressed very

smoothly.

12. Women of a higher grade of intelligence are

best suited to this form of treatment.

13. This treatment is best carried out in primiparæ or in multiparæ with tedious labors. It has no place in short labors.

14. This is an ideal form of treatment in patients

suffering from cardiac disease.

EDWARD L. CORNELL.

#### PUERPERIUM AND ITS COMPLICATIONS

Purslow, C. E.: Puerperal Eclampsia. Lancet, Lond., 1915, clxxxviii, 309. By Surg., Gynec. & Obst.

The author's discussion of puerperal eclampsia is divided in its prophylactic treatment into the treatment of the effects and of the toxemia and the obstetrical treatment.

In the management of this condition it is of the utmost importance to recognize the common symptoms of the pre-eclamptic state, as albuminuria, persistent headache, œdema, disturbances of vision and hearing, and severe epigastric pain. When a considerable quantity of albumin is found in the later months of pregnancy, the patient should be put to bed at once. Give nothing but water for the first 48 hours, then milk well diluted, and continue a very limited diet until the kidney function improves. Supplement this treatment with free purgation and retention normal salt solution per rectum.

If, as usually happens, the patient is seen after an attack has occurred, she must be put to bed at once in a quiet, darkened room, as free as possible from all causes of external irritation, and the nurse given special instruction to keep her from harm in succeeding attacks. Here again give water only, a quick acting aperient, as croton oil M ij, and after clearing the lower bowel give slowly 4 ounces of water with 2 ounces of magnesium sulphate. In addition to this he suggests the use of intravenous or subcutaneous injections of a solution of sodium chloride and sodium acetate, a dram of each to the pint. Various other methods have been used for controlling the attacks, as the use of chloroform, morphia, thyroid extract, nitroglycerine, veratrum viride, pilocarpine, oxygen, cold baths, decapsulation of the kidneys, and lumbar puncture.

The author believes if labor has started and can be terminated quickly under an anæsthetic it would not be out of order to interfere, while if the cervix is not yet obliterated either the radical or the expectant method of treatment may be pursued. The expectant plan is to be followed as outlined under the last paragraph, while if active interference is deemed wise either rapid dilatation and delivery or delivery by vaginal or abdominal cæsarean section should be done.

C. D. Holmes.

Henkel, M.: Puerperal Infection of Wounds in the Light of Recent Research (Die puerperale Wundinfektion im Licht neuerer Forschung). Reichs-Med.-Anz., Leipz., 1914, xxxix, 417.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Distinction must be made between endogenous and exogenous infections. Hæmolysis is not characteristic of certain strains of streptococci. Division into parasitic and saprophytic bacteria is not recognized. Bacteriological examination of the blood and vaginal secretion is important. In infected abortion expectant treatment cannot be given as a general rule, but a conservative operation is often necessary. The operation should be with the finger; no irrigation and no curettage being done. If the cervix is not dilated, artificial dilatation should not be performed, but anterior hysterotomy without suture.

Bondy.

Winter, G.: Retention of Placenta and Puerperal Fever (Placentarretention and Puerperalfieber). Monatschr. f. Geburtsh. u. Gynäk., 1915, xli, 56. By Surg., Gynec. & Obst.

In contrast to the usually accepted opinion, Winter holds that puerperal fever is not caused by retention of remnants of placenta; it only happens that they coexist in many cases. He expressed this opinion in a former publication, to which Ahlfeld replied in support of the older opinion. Winter replies to Ahlfeld's arguments in this article. He agrees that auto-infection from bacteria in the vagina is both possible and frequent, but he holds that the bacteria penetrate the wall of the uterus directly, and that this occurs whether or not there is retained placenta. In support of this idea he cites statistics from his own clinic; among 140 cases of retention of placenta the puerperium was afebrile in 66, or 44 per cent; it was slightly febrile in 75, or fifty per cent; and there were 8 severe cases of fever with one death. But in 4 of these severe cases there had been an operation that might have been responsible for the infection.

In order to demonstrate from the autopsy findings that the infection was caused by the retained placenta it would be necessary to show that the entire thickness of the placenta was infested with bacteria down to the maternal blood-vessels. In all the cases examined by Winter he found bacteria only in the peripheral part of the placenta.

The reason he thinks it so important to decide this question is that the old conception of it makes it imperative to empty the uterus of the retained remnants at once; in so doing opportunity is created for further infection. He hopes to stimulate further investigation of the subject with a view to influencing treatment.

A. Goss.

Henkel, M.: Puerperal Fever and Treatment of Febrile Abortion (Ein Beitrag zur Lehre vom Puerperalfieber und zur Behandlung des fieberhaften Abortes). Virchow's Arch. f. path. Anat., etc., Berl., 1014, ccxvi, 361.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeh.

The author discusses Semmelweiss's teaching with regard to puerperal infection, but he advises a more conservative technique in order particularly to avoid making new wounds in the internal genital organs. The lochia is taken not from the uterus with a tube, but from the vault of the vagina with The uterus should not be irrigated at all. The bacteriological question is not so important as has been assumed heretofore, because, after careful examination of the lochia in puerperal processes, it has thus far had no marked effect in preventing puerperal fever, but it is important to make a bacteriological examination of the blood, the chief emphasis being laid on comparison of the results of several such examinations. The examination should not be limited to the genital organs. It is much more important to determine whether a general infection has begun and how far it has progressed; clinical and anatomical signs are of more importance than bacteriological ones. In doubtful cases it can be determined whether a general infection has set in by opening Douglas' pouch and making a bacteriological examination of the secretion.

With regard to abortion, Henkel believes that in non-infected cases it is best to wait for spontaneous discharge of the contents of the uterus, but that in infected cases the uterus should be emptied as quickly as possible. This should be done with the finger with as much care as possible. The infected endometrium should not be curetted. If the cervix is not dilated, its rapid dilatation with rigid dilators or laminaria tents may be dangerous, because of injury to the cervix or pressure gangrene.

The author has had good results in 24 cases of infected abortion in which he performed anterior colpohysterectomy for the purpose of opening the cervical canal. The operation is simple and the wound does not have to be closed with sutures but heals spontaneously without leaving any bad effects.

The chief cause of febrile abortion is criminal abortion. In such cases therapeutic measures should depend on the bacteriological examination of the secretion from Dauglas' pouch

of the secretion from Douglas' pouch.

In the prognosis of febrile abortion it is important to determine whether the infection took place through the blood or lymphatic circulation; that is, secondarily. If so, the prognosis is very unfavorable.

Stroganoff, W. W.: The Treatment of Beginning Puerperal Disease with Hot Vaginal Irrigations (Die Behandlung der beginnenden Formen puerperaler Erkrankungen mit heissen Vaginalspülungen wechselnder Zusammensetzung). Novoye v Med., St. Petersb., 1914, viii, 513.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Stroganoff, from theoretical study and clinical results, recommends a systematic use of several disinfecting solutions in puerperal disease. treatment of puerperal disease consists in killing the cause of the infection. Since micro-organisms have the capacity of accustoming themselves to poisons and show different degrees of sensitiveness to one disinfectant or another, and since puerperal infection is sometimes caused by several different kinds of bacteria, the different disinfectants must be used at the same time. The simultaneous use of different substances also offers the advantage that the effectiveness may be increased (Bürg's law). The high temperature of the irrigating fluid (37 to 38° R. or 46.25 to 47.5° C.) produces a temperature that is not the optimum for the growth of the bacteria and produces electrolytic dissociation of the substance, and also stimulates the uterus to contraction. In mild diseases we should begin with bichloride irrigations 1:3000 or 1:4000 at 37 to 38° R. If no improvement takes place, irrigations are given three times a day: (1) bichloride 1:3000; (2) 1.5 per cent carbolic acid solution; (3) bichloride with denatured alcohol - one-half to I glass of alcohol to 1 liter of alcoholic solution. This treatment is supplemented by ice, the ice-bag being removed three-fourths of an hour after the irrigation; abundant fluid, chiefly tea with cognac and three to six glasses of wine, is given daily.

If retention is suspected the uterus is emptied, followed by irrigation with bichloride 1:5000 and the addition of one-half to 1 glass of 96 per cent alcohol.

Stroganoff has treated 30 cases of severe puerperal disease by this method, with one death. The others had fever on an average of 3.76 days. He recommends that his method be further tested.

WAEBER.

Cumston, C. G.: Gangrene of the Limbs During the Puerperium. Am. J. Obst., N. Y., 1915, lxxi, 53. By Surg., Gynec. & Obst.

The author discusses occlusion of the arterial system, of the venous system, and of both.

Arterial occlusion may be due to embolism from endocarditis, thrombosis of the left heart, or paradoxical embolism; primary arteritis from septic or toxic endarteritis; secondary arteritis by propagation of the imflammation of the neighboring veins; primary thrombosis from the uterine artery or its placental ramifications; secondary thrombosis from total occlusion of the circulation in the venous system.

Venous occlusion may result from a primary phlebitis or septic or toxic thrombophlebitis; secondary phlebitis from a metrophlebitis, an extension of the inflammation of a neighboring artery, or by contiguity or a primary thrombosis beginning in the veins.

Cumston does not believe that a phlebitic thrombosis alone can by any possibility give rise to gangrene, because a collateral circulation becomes too quickly established for blood stasis to become absolute. He quotes the statistics of Wormser and of Winterer, which show that arterial obliteration is the most frequent. The chief cause of gangrene is infection, and probably in all cases a puerperal endometritus opens the way. At the commencement of the process it is impossible to tell whether the case is one of dry or moist gangrene, but in a general way it may be assumed that arterial obstruction will result in mummification, while moist gangrene is the outcome of venous occlusion.

The general treatment of gangrene consists in sustaining the strength, while the pain and elevation of the temperature must be dealt with along symptomatic lines. As soon as a line of demarcation appears no time should be lost in amputating.

C. H. DAVIS.

#### MISCELLANEOUS

Eben, R.: Diagnosis of Pregnancy in the Early Stages and Study of the Diagnostic Value of the Skin Reaction in Pregnancy (Beiträge zur Diagnose der frühen Schwangerschaftsstadien nebst Untersuchungen über den diagnostischen Wert der Cutanreaktion in der Schwangerschaft). Prag. med. Wchnschr., 1914, xxxix, 301.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Eben examined 18 cases of early pregnancy 32 to 52 days after the last period. His attention was directed to the symptom of marked anteflexion of the uterus and increase in the diameter. In 11 of 12 cases these symptoms were sufficient for diagnosis. In the remaining cases Hagar's sign was positive in some and doubtful in others. In many cases Abderhalden's reaction was of value. In 10 cases of certain pregnancy Engelhorn and Wintz's skin reaction with placental extract was tried and the results were negative in all cases.

SCHNEIDER.

Welsch, H.: Diagnosis of Pregnancy by Abderhalden's Method; Its Application in Legal Medicine (Le diagnostic de la grossesse par la méthode d'Abderhalden; son application en médicine légale). Ann. d'hyg., Par., 1914, xxi, 497.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author discusses Abderhalden's serum diagnosis, especially for the demonstration of pregnancy. According to Abderhalden, the reaction has always been positive in every case, but Welsch claims that these results have not been obtained by

The author has been able to make the diagnosis in a number of cases from blood spots on the clothing or bed linen, even when the spots were dry; sometimes the reaction was positive sixty-five days after drying. This is a very important point in legal medicine. STADLER

Murray, H. L.: Acidosis and the Nitrogen Partition in Pregnancy. Brit. M. J., 1915, i, 151. By Surg., Gynec. & Obst.

The excretion of ammonia in pregnancy is not a reliable basis for the detection of acidosis, for it may be normal in acidosis and higher without acidosis.

The estimation of the acetone bodies gives a somewhat better estimation though a rough one. Variations in ammonia value may be due either to a fault in protein metabolism or to a compensatory process to neutralize an acidosis. There are types of acidosis in which the ordinary acetone bodies do not occur. The presence of some acetone in urine is not a proof of acidosis. EMIL SCHWARZ.

Gaetano, B.: The Influence of Lactation upon Restitution of the Thymus After Pregnancy (Der Einfluss des Säugens auf die Restitutionsfähigkeit des Thymus nach der Schwangerschaft). Zentralbl. f. allg. Pathol., 1914, xxv, No. 22. By Surg., Gynec. & Obst.

The author removed small pieces of thymus of rabbits during pregnancy so as to compare the tissue with the thymus after the experiments were These pieces of thymus showed the completed. changes described by Fulci, consisting of an atrophy of the thymus with cedema and sclerosis during pregnancy. The animals were killed later, some after a post-partum period without lactation, some after a period of lactation, and some after a lactation free-period following lactation. The results showed that after the termination of pregnancy the thymus soon returns to its normal state, the changes all disappearing. If lactation follows pregnancy, the changes remain until lactation ceases, when immediate restitution sets in. Lactation therefore is a factor delaying the restitution of the thymus after pregnancy. L. A. JUHNKE.

Nebesky, O.: Chorio-Angiomata (Beitrag zur Kenntnis der Chorioangiome). Monatschr. f. Geburtsh. u. Gynäk., 1914, xl, 42.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

Besides 88 authentic cases of chorio-angiomata from the literature, the author reports one of his own in which the delivery was normal; the child was living and weighed 2,580 gm.; there was no hydramnios. The tumor, as large as a mediumsized orange, was 4.5 cm. in diameter and was located between the point of insertion of the umbilical cord and the edge of the placenta.

The author discusses the various opinions as to the character of the new-growth, whether it is a true tumor or a primary regressive process of degeneration; from his own case he thinks it is a true tumor, an angioma of the chorionic villi. Growth through sprouting of the capillaries could not be demonstrated; there was a sharp separation between the tumor and the surrounding chorionic connective tissue. The unusual structure of the tissue was particularly noticeable; slightly enlarged it resembled somewhat cross-sections of glands, such as those of the liver and mammary glands. Nowhere in the tumor was the form of the chorionic villi indicated, and, according to Ruge and Rob Meyer, this is an indication of the fact that it was a newgrowth. At birth there was beginning necrosis of the tumor, and part of the placenta lying beneath the tumor was necrotic; the other half was hyperæmic, but was otherwise normal in structure. The cause of the necrosis in both cases must have been the same, since it was the marginal portions that were most affected.

Nebesky doubts the assumption of a circulatory disturbance, such as heart disease, nephritis, heartfailure, and arteriosclerosis as causes, but thinks

they may further development.

The prognosis for the mother is not bad, but is very bad for the child. The decisive point in the prognosis for the child is whether the remaining normal placenta is sufficient to carry out the placental function.

GRAEUPNER.

Stoeckel, W.: Obstetrics (Geburtshilfe). Jahresk. f. ärzil. Fortbild., 1914, v, 3.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author discusses the decline in the birth-rate, prevention of pregnancy, and abortion. The first is chiefly voluntary and is not due to inability to bear children, although many things indicate that the capacity for reproduction is decreasing. The economic life of women threatens their capacity for motherhood. A great deal of harm is done in extending the indications for artificial abortion.

In the author's opinion the Abderhalden method is so difficult that it can scarcely be used in practice as a means of diagnosis. Veit's assertion that the Abderhalden method enables us to recognize the albumin discharge in the urine during pregnancy as fœtal albumin is important, because it throws light on the kidney diseases accompanying pregnancy. The practical use of Schottländer's proposed method of diagnosis of the different months of pregnancy from histological examination of the placenta is still doubtful. The investigations of Naeke and Lutz are of medicolegal importance. They point out that "mature" and "full-term" are not identical.

Of the obstetrical operations, hebosteotomy seems almost to have disappeared. Potter's proposed treatment of flat pelvis by resection of the promontory deserves mention. The results of extraperitoneal cæsarean section are good. Injections of natural and artificial serum have shown good results in the toxicoses of pregnancy. In the treatment of eclampsia the combined treatment is probably best: viz., exclusion of irritation, chloral enemata, and delivery as soon as it can be performed without danger.

Benthelm.

Gall, P.: Indications and Contra-Indications for Extract of Hypophysis in Obstetrics (Indikationen und Kontraindikationen der Hypophysenextrakte in der geburtshilflichen Praxis). Gynäk. Rundschau, 1914, viii, 394.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

The author reports observations in over 300 cases in which pituglandol was used.

The indications are as follows: (1) weak pains (in the early months of pregnancy the effect is slight; in artificial premature delivery, especially with metreurysis, more prompt); (2) face and breech presentations and placenta prævia in combination with metreurysis or version; (3) contracted pelvis, provided that the degree of contraction makes a delivery by the normal route possible; (4) retention of the placenta — no effect in placenta accreta; (5) cæsarean section; and (6) atony (in conjunction with the injection of secacornin).

Contra-indications are extreme contractions of the pelvis, transverse positions threatening rupture of the uterus, heart and kidney diseases, and eclampsia.

Schiffmann.

Bucura, K. J.: Some Questions in Obstetrics and Gynecology; Strengthening the Pains During Labor; Radium and Röntgen Treatment in Gynecology; Treatment of Myomata (Einige aktuelle Fragen aus Geburtshilfe und Gynäkologie; Wehenverstärkung bei der Geburt; Radium und Röntgen Therapie in der Gynäkologie; Behandlung der Myome). Wien. med. Wchnschr., 1914, lxiv, 1588.

By Zentralbl. f. d. ges. Gynäk. u. Geburtsh. s. d. Grenzgeb.

In using hypophysis preparations for strengthening the contractions in delivery, strict account should always be taken of the indications and contraindications. They are indicated during the second stage of labor at the normal end of pregnancy, and are contra-indicated in sclerosis of the coronary arteries and in nephritis with increased bloodpressure, acute anæmia, distention of the lower segment of the uterus, and in scars and strictures of the cervix. If these contra-indications are present, it is better to use quinine o.1 every half hour or hour, or, better still, quineonal (Merck), as it causes less pain.

According to the author's experience in radium treatment, all malignant tumors of the body and cervix of the uterus and all malignant new-growths of the vulva and vagina should be operated upon in combination with radium treatment. The latter alone should be used only in superficial carcinomata of the vulva and vagina and in recurrences.

Röntgen treatment is indicated in gynecology for diseases of the uterus which do not demand surgical intervention, pruritis and krauroris vulvæ, inoperable carcinomata of the uterus, and malignant inoperable tumors of the ovary, and in all recurrences of carcinoma. It is contra-indicated in myoma in young women where malignancy is suspected and in incarcerated, suppurating, rapidly growing submucous myomata.

In the treatment of myoma Bucura reaches the following conclusions: (i) The patient must be told if she has a myoma that cannot be treated. (2) Röntgen treatment should be used only in uncomplicated cases in patients over forty. (3) Cases should be operated upon which cannot be influenced by medicinal treatment or by radium therapy. FRANKENSTEIN.

#### Morse, A. H.: Bilateral Congenital Caput Obstipum. Surg., Gynec. & Obst., 1915, xx, 74 By Surg., Gynec. & Obst.

Morse reports a case of fœtal dystocia, due to extension of the head, which was delivered by abdominal cæsarean section.

At first it was thought that the extremely retracted position was due to brow presentation, but since there was no tendency to assume the normal position some other cause was sought for. There was no tumor of the neck nor was the thymus or vertebral column abnormal; by exclusion, the diagnosis of double wry-neck was made.

The sternomastoid muscles could be distinctly palpated, and the question arose as to whether spasmodic contraction of both these muscles could

give rise to such a deformity.

The sternomastoids were accordingly dissected out in a stillborn but unmacerated fœtus. Traction was then made on the mastoid processes by grasping each muscle at its center with an artery clamp, and rotation backward of the head occurred. Heavy silk sutures were then passed from the point of insertion to the point of origin of each muscle, approximately in its course. Traction made upon the lower ends of these sutures, the cadaver being in a horizontal position, swung the head backward even to a greater degree than in the first experiment. The position was the same as that noted clinically, and the experiments demonstrated that the extreme extension could be explained by the combined action of the sternomastoid muscles.

The condition cleared up spontaneously when the child was four months of age, apparently as the result of constant massage on the part of the mother.

Gunson, E. B.: Child with Tooth Erupted at Birth. Proc. Roy. Soc. Med., 1914, viii, Sect. Dis. Child., 1. By Surg., Gynec. & Obst.

Gunson reports a case in which the left lower median incisor was erupted at birth in a male infant, one of twins born at full term. On the tenth day the tooth which was then loose and attached only by the gum was removed, as its presence interfered with suckling. The right lower median incisor had then also appeared through the gum. The child was well developed and presented no other abnormality. The fellow twin was normal.

EDWARD L. CORNELL.

#### Grulee, C. G.: Care and Feeding of Incubator Babies. Surg., Gynec. & Obst., 1914, XX, 234 By Surg., Gynec. & Obst.

Grulee reports 8 incubator babies treated at the Presbyterian Hospital, Chicago, between December 31, 1913, and November 15, 1914. This included all the premature infants treated by the author at that period at this hospital. Of those treated one died; this was a child delivered by cæsarean section, the infant being found free in the abdominal cavity. The incubator temperatures were all favorable, none being below 94° F. Weight when first seen: less than 2 pounds, 1; between 2 and 3, 3; between 3 and 4, 3; and one weighed 6 pounds.

The author emphasizes the necessity for careful attention to these babies, which should be directed along two lines: (1) temperature of the incubator - high temperature in the incubator is dangerous as well as low temperature; (2) the nurse should not handle the child except when necessary. The four-hour period for feeding is advised, the infant to be fed by gavage. The conclusions are:

1. Attention to detail was largely responsible for the survival of seven out of eight premature babies.

2. In every case the four-hour interval for feeding was strictly observed.

3. In the two cases which were fed artificially, undiluted albumin milk was given, to which, within a few days, was added carbohydrate in the form of a dextrin maltose mixture.

### GENITO-URINARY SURGERY

#### KIDNEY AND URETER

Crowe, S. J., and Wislocki, G. B.: Experimental Study of the Suprarenal Glands (Experimentelle Untersuchungen an Nebennieren). Beitr. z. klin. Chir., 1914, xcv, 8.

By Surg., Gynec. & Obst.

The authors describe a series of 31 experiments on dogs for the purpose of examining the function of the suprarenal glands, and supplement the report of their experimental pork by giving tables showing the results of the operation.

They come to the following conclusions:

In the dog the suprarenal glands are necessary to life, and it is probably the cortex and not the me-

dulla that is the essential part.

2. After partial extirpation of the suprarenals the part left shows hypertrophic changes. The increase is in the cortex, chiefly in the zona fasciculata. The medulla does not show any compensatory hypertrophy.

3. In some cases chronic infection of an animal having suprarenal insufficiency produces local necrosis without hæmorrhage in the zona fasciculata of the cortex of the remaining part of the suprarenal. There was no hæmorrhage or destruction of the cells of the medulla in any of the cases as a result of an

acute or chronic infection.

4. After almost complete removal of both suprarenals the animals often showed general convulsions, subnormal temperature, and other symptoms of acute suprarenal insufficiency. In some cases the animals recovered after these symptoms and developed normally in growth and sexual function. The temperament did not change; they increased in weight, but not to an abnormal degree. There was no polyuria.

5. There was no permanent rise or fall of carbohydrate metabolism as a result of suprarenal in-

6. Temporary glycosuria followed the operation

whether it was on the right or left side.

7. Autoplastic transplantation may take, but it has no functional value. If a piece of suprarenal, consisting of marrow and cortex, is transplanted, the cells of the cortex may persist, while those of the medulla are absorbed.

8. There seems to be a relation between the suprarenals and the lymphatic system. On autopsy the most striking finding in an animal with suprarenal insufficiency of long duration, was the enlargement of the mesenteric and retroperitoneal lymphatic glands and the solitary follicles in the intestinal wall. Frequently there was hyperplasia of the thymus. Further experiments are to be made on this point.

Simon, W. V.: Movable Kidney (Beiträge zur Kenntnis und Behandlung der Wanderniere). Ztschr. f. Urol., 1914, viii, 609.

By Surg., Gynec. & Obst.

Case histories are given of the 48 cases on which this article is based. Eight of the patients were men, a rather high percentage compared with most statistics.

Simon does not believe that childbirth has any particular influence in the etiology; he is inclined to think that it is a congenital condition. In 25 of the cases nephropexy was performed, and the results were not particularly better than in the cases treated conservatively, though it must be taken into consideration that the cases operated upon were the most severe ones. Many of the patients have to wear a binder after the operation, or the painful symptoms recur.

In a great many cases the diagnosis is not certain: that is, it is not certain whether the symptoms described are really due to the movable kidney. Operation should be undertaken only when all other methods of treatment, such as bandages, diet, etc., have failed, and when gynecological conditions, appendicitis, and other diseases can be absolutely excluded as the cause of the symptoms. Nephropexy should not be performed in patients with hysteria or neurasthenia.

Thompson, G. S.: A New Operation for Movable Kidney. Med. J. Austral., 1915, i, 168.

By Surg., Gynec. & Obst.

The method advocated is unique. From a mechanical point of view it seems logical, but somewhat illogical from a physiological point of view, so much so that time alone will prove the correctness of either view.

Practically, the kidney is surrounded by a net similar to one worn by women over their hair, but made either of chromicized catgut or of floss silk. The kidney being exposed in the natural way, the net is placed over the same as over a woman's head, the pelvis and ureter being free as is the person's face. The advantage claimed for the operation is that the kidney remains in position as placed and is yet permitted a certain amount of normal mobility which is not given with other forms of fixation, provided the technique recommended to prevent the net's slipping is observed. The contra-indication is the possibility of the presence of the netting provoking the formation of a fibrous capsule, making an inelastic covering which will interfere with the normal expansion and contraction of the kidney, with increased or lessened circulatory activity.

The author reports one case operated upon in 1909, which is still quite well and free from all symptoms, but he admits that his own experience and that of others is not sufficient to make permanent deductions as to the efficiency and prac-G. S. Peterkin. ticability of the operation.

Barber, W. H., and Draper, J. W.: Renal Infection; a Further Experimental Study of Its Relation to Impaired Ureteric Function. J. Am. M. Ass., 1915, lxiv, 205. By Surg., Gynec. & Obst.

In the discussion of this very interesting subject, the authors consider the physiology, embryology, and anatomy of the ureter. The experimental procedures which they initiated to determine the local factors covering the infection were those (1) concerning the ureterovesical valves (2) and

peristalsis of the ureter.

The conclusions reached by the authors are: (1) Given an infected bladder and making due allowance for systemic and local resistance the ureterovesical valves can be cut without resulting renal infection — duration of life indefinite. (2) If the ureter is circumcised to, but not through, the vesical mucosa, the kidney remains normal—duration of life indefinite. (3) Ureteral traumatism resulting in greater or lesser degrees of impairment of function, as indicated by prostatic paralysis, resulted in 75 per cent of cases in hydronephrosis, which in the early stages were not infected; a mechanically changed kidney which might or might not be infected later - average duration of life, 30.33 days. (4) If the valves were cut and the ureters were paralyzed, hydronephrosis did not occur, but the kidneys underwent a primary infective change in 50 per cent of cases — average duration of life, 13.57 days. I. S. Koll.

MacGowan, G.: Hæmatogenous Kidney Infections. J. Am. M. Ass., 1915, Ixiv, 226. By Surg., Gynec. & Obst.

I. S. Koll.

MacGowan claims as an etiological factor in the production of hæmatogenous infections of the kidney that we must necessarily have the presence of pus-producing organisms in the blood and a lowered local resistance in one kidney. An infection of the kidney or bladder may be esteemed as hæmic in its origin when no evidence can be elicited that at any time an instrument has been introduced into the bladder or that a communication has been established between the intestine and the pelvis of the kidney.

The micro-organisms which have been known to cause hæmic infections of the kidney or urinary tract are, in the order of their frequency, colon bacilli, tubercle bacilli, staphylococcus aureus, streptococcus, gonococci, proteus hausseri, typhoid bacilli, paratyphoid bacilli, and pneumococci. An account of the diagnosis follows, and the treatment of each individual type of infection is taken up

separately.

Proctor, J. M.: Sarcoma of Kidney. South. M. J., By Surg., Gynec. & Obst. 1015. viii, 36.

The author gives the clinical findings and points of diagnosis in a case of sarcoma of the kidney. The patient, a boy aged 2 years and 8 months, had a previous history of malaria 6 months before the onset of sarcoma. Four weeks before his death the mother noticed an enlargement in the left side of the abdomen. The father, who was a physician, considered this swelling to be due to a large spleen because of a previous attack of malaria. Some gastric disturbance developed, which was not relieved by treatment, and the tumor enlarged very rapidly. The author was called in consultation and found a very much emaciated and restless child, pulse 120, temperature 99°, respiration 40. Breathing seemed to be very difficult. A large mass filling the left abdomen and flank and projecting into the left iliac region was felt. This mass was hard and indurated and a distinct depression was found between it and the left costal margin. There seemed to be no movement on respiration. Examination of the urine showed microscopic blood. The blood showed leukocytosis but no plasmodia of malaria. The child had a few sinking spells, and his breathing became more and more labored until he was very much cyanosed. An operation was considered, but because of the lung symptoms it was not thought advisable. He died four weeks from the date of the discovery of the tumor by the mother.

Proctor based his diagnosis of renal sarcoma on the following points: (1) age, (2) location, (3) rapid growth of the tumor, (4) immobility on respiration, (5) space between the costal arch and the upper end of the mass, (6) microscopic blood, (7) inflation of the colon in front of the tumor, and (8) absence of malarial plasmodia.

An autopsy was made which showed the intestines pushed into the right abdomen, the ascending colon being in front of the colon and adherent to it. The spleen was normal in size. No fluid was found in the abdomen. A mass was found as described above and was diagnosed as a tumor of the kidney. Microscopic examination showed it to be a sarcoma. G. J. THOMAS.

Rochet, V., and Thévenot, L.: Tuberculosis of Horseshoe Kidney (Tuberculose du rein en fer à cheval). Lyon chir., 1914, xii, 101.

By Surg., Gynec. & Obst.

Horseshoe kidney is an anomaly that occurs frequently enough to make it of considerable importance in pathology. Botez has found it once in 715 autopsies and once in 143 operative cases. Rochet and Thévenot have collected 10 cases from the literature of tuberculosis in a horseshoe kidney, brief abstracts of which are given, and they add a detailed case history of one case of their own. In such cases a diagnosis must first be made of renal tuberculosis; they review the various methods of functional examination of the kidneys for this

purpose; in the second place the existence of a horseshoe kidney must be established. The ureteral orifices appear at the normal location and there is nothing in the cystoscopic examination to reveal the anomaly. Careful palpation will reveal a median transverse mass, with two lateral lobes situated lower down and nearer the median line than the normal kidneys. If the two ureters are catheterized with opaque catheters and collargol injected into the pelves, the ureters and pelves will be found much nearer the median line than normal.

Fortunately the tuberculosis is generally unilateral, and the two lobes function independently, so that removal of one lobe has the effect of a total, not a partial nephrectomy. The fatal effects of the latter are well known. The functional sufficiency of the remaining lobe must, of course, be demonstrated. In 7 of the cases resection of one lobe was

performed, in 5 with complete success.

As to the method of operation, median laparotomy is preferable to the lumbar incision, because it brings into view the vascular pedicles of the kidney; in addition to those for each lobe there is usually a median one for the isthmus, made up of two short arteries from the aorta or the mesenteric arteries. It is easy to avoid these in the abdominal operation. The isthmus is sometimes adherent and great care must be exercised in freeing it. If these precautions are taken the operation is not more difficult than an ordinary nephrectomy. In only one case was the operation followed by a urinary fistula.

A. Goss.

Kidd, F.: Nephrectomy for Kidney Tuberculosis (Zwei neue Gesichtspunkte in der Frage der Nephrektomie wegen Nierentuberkulose). Ztschr. f. Urol., 1914, viii, 446. By Surg., Gynec. & Obst.

Nephrectomy is universally acknowledged to be the proper treatment for tuberculosis of the kidney, when it can be shown by catheterization of the ureters that the disease is unilateral and that the other kidney has sufficient functional capacity. But in many patients the bladder is so sensitive that cystoscopy and catheterization of the ureters is impossible. And in many cases, too, the wound becomes infected with tubercle bacilli, and a very stubborn

and persistent fistula is formed.

To avoid the first difficulty the author advises examination of the ureters, because if the kidney is infected the ureter is sure to be. If the tuberculous foci are large and extramuscular as well as submucous the ureter is thickened and can be palpated through the rectum or vagina. If they are small and only submucous they cannot be palpated, but a skilled operator can tell by inspection whether the ureter is infected. When rectal or vaginal examination shows one ureter involved, and not the other, the uninvolved one is laid bare by a small incision, and if inspection shows it to be free the affected kidney is immediately removed.

The author has operated upon six cases examined in this way with complete success, in which there was no other means of deciding the question. He thinks infection of the wound is due to the fact that most surgeons shell the kidney out of its fatty capsule and leave the capsule in place. He believes the kidney should be removed intact, together with the fatty capsule and the fascia.

A. Goss.

Casper, L.: Kidney Operations in Bilateral Kidney Disease (Nierenoperation bei doppelseitigen Nierenerkrankungen). Ztschr. f. Urol., 1914, viii, 546. By Surg., Gynec. & Obst.

The question of operability of a kidney depends rather more upon its functional capacity than upon its anatomical condition. Casper leaves out of account the phenolphthalein test as he does not think its value has been sufficiently demonstrated. He defines as a kidney with good function one that begins to excrete coloring matter within 5 to 8 minutes after injection of indigo-carmin, and becomes blue in a short time, produces saccharin 18 to 25 minutes after the injection of phloridzin, and whose freezing point varies sufficiently on the administration and withdrawal of fluid.

An insufficient kidney does not produce sugar after the administration of phloridzin, does not excrete coloring matter until late and then only becomes green, and there is deficient reaction to the administration of fluid. Operation when the second kidney is in this condition is dangerous.

Some authors have reported that sometimes normal kidneys do not excrete sugar after phloridzin. Casper explains their results by a number of factors: there are poor qualities of phloridzin on the market that do not cause sugar production; too small a dose is sometimes given, the normal dose being o.or gm.; polyuria may dilute the urine to such an extent that the reaction is not apparent. Fluid should not be given just before the examination and a dose of morphine may be given to avoid nervous polyuria. Nutrition has an effect on sugar production, so food should be taken one to three hours before the examination. Contracted kidney may not show any symptoms for a long time, so the negative reaction may be explained by the fact that the kidney is really diseased, though it shows no symptoms.

The author believes that if the tests are made with sufficient care and regard to all these facts, the normal kidney will always react to phloridzin. He has performed 322 operations in unilateral kidney disease; in the series there were 19 deaths, none of them due to defective function of the other kidney. He gives brief case histories of 8 operations in bilateral kidney disease in which the tests showed that the function of the second kidney was sufficient; 7 of these lived and one died. Kidneys that function moderately well are apt to improve after removal of the more seriously diseased kidney, because greater demands are made on their functional capacity and the toxic influence of the diseased kidney is removed. He states that his judgment was defective as to the functional capacity in only

one case.

Barth of Danzig reports a series of cases with no failures in diagnosis. Histories are also given of 9 cases in which the second kidney was judged inadequate before operation, and 8 of these patients died. On the whole the series of cases shows the adequacy of these methods of testing kidney function.

A. Goss.

Smith, G. G.: Separate Renal Function; Observations as Determined by the Ureteral Catheter and Phenolsulphonephthalein. J. Am. M. Ass., 1915, lxiv, 223. By Surg., Gynec. & Obst.

The author attests the value of phthalein given intravenously in determining the separate function of the kidneys. He finds leakage about the catheters to be infrequent; and inasmuch as this possible error can always be known by catheterizing the bladder, it forms an insignificant objection. appearance time on each side averaged about three minutes, and the first fifteen-minute output about 15 per cent for each side. A greater output than 15 per cent in the first fifteen minutes on one side indicates a compensatory hypertrophy with a diseased fellow, and this increase in work may equal that of two normal kidneys combined, or 30 per cent. Smith finds that the test reports the value of each kidney with great faithfulness and agrees with the actual pathologic condition. The passage of the ureteral catheter does not apparently influence either the time of appearance nor the amount of FRANK HINMAN. the dye excreted.

Gehrels, F.: The Determination of Functional Activity of the Kidney Without Ureteral Catheterization. Med. J. Austral., 1915, i, 141.

By Surg., Gynec. & Obst.

To ascertain the condition of the presumably healthy kidney in cases in which ureteral catheterization is not feasible (boys under 8 years, congenital or acquired strictures, contracted and inflamed bladder, etc.), Gehrels recommends the following procedure: After taking accurate notes of the history and making a careful routine examination of the patient, the estimation of the functional activity of the kidneys is carried out by means of injecting I ccm. of a 2 per cent phloridzin solution, which is followed ten minutes later by an injection of 20 ccm. of a 4 per cent indigo-carmin solution into the substance of the gluteal muscles. The patient is told to urinate 20, 25, 30, and 35 minutes after the first injection, or the urine is drawn off by a catheter. The time of the first appearance of blue coloration and of sugar is noted. Delay of appearance of blue coloration beyond 15 to 20 minutes and of sugar beyond 25 to 30 minutes points to the deterioration of renal function and contra-indicates nephrectomy, which may be performed with safety in cases with excretion of blue and sugar within normal limits of time, indicating that one kidney is capable of performing the necessary work for both organs.

For cases of suspected bilateral renal tuberculosis,

in which ureteral catheterization is impossible, and where a fairly normal renal capacity is ascertained by the above tests, the following method is employed: After a bilateral lumbotomy a small opening is made in the pelvis or ureter of the apparently healthy side and a No. 8 ureteral catheter introduced upward. If the urine collected in this way proves to be free from pus, the other kidney may be removed at once, but if a sufficient amount of urine is not obtained within a reasonable space of time the catheter remains in situ and a more radical operation is carried out a few days later, according to the condition of the urine. In case both kidneys appear to be healthy, a bilateral ureterotomy or pyelotomy should be carried out, to be followed by a more radical surgical procedure based upon the result of the examination of both renal secretions.

The author condemns the performance of exploratory nephrotomy for suspected tuberculosis; the danger of a fistula forming after pyelotomy or ureterotomy is small, provided that the ureter is not obstructed.

MARTIN KROTOZYNER.

Gayet, G., and Beaujeu, J. de: Value of Pyelography in Diagnosis of Some Urinary Affections, Particularly Movable Kidney (Valeur de la pyélographie pour le diagnostic de quelques affections urinaires et en particulier du rein mobile). Lyon chir., 1914, xii, 113.

By Surg., Gynec. & Obst.

Gayet and de Beaujeu review the history of the development of pyelography and are ardent advocates of its use. They discuss the bad effects that some surgeons have had in its use, such as pain, fever, nephritic colic, and, most serious of all, penetration of the collargol into the kidney parenchyma. The latter, they believe, is due to injecting the collargol under too great pressure; they no longer use a syringe, but let it flow in under atmospheric pressure without raising the receptacle too high. Since adopting this method they have had none of the above complications. General intoxication from the silver salt, which has been reported by a few authors, they do not believe occurs.

They give a detailed description of the technique, both for injecting the collargol and taking the röntgen picture. Eighteen röntgenograms are given and 17 case histories, illustrating the different conditions in which they have made use of the procedure. Thus far they have used it in three conditions: (1) in suppurative pyelonephritis, to determine the degree of dilatation and retention and also for the antiseptic action of the collargol, which they find is very powerful; (2) in cases of difficult diagnosis of tumor, to locate the kidney and find whether the tumor is really one of the kidney; and (3) in movable kidney. They have not used it in hydronephrosis, except in the slight dilatations accompanying movable kidney, though it is generally admitted that this is the indication par excellence for its use.

Movable kidney is one of the most disputed fields in kidney pathology. Many clinicians oppose

operation at all, because there are so many cases in which it is neither necessary nor effective. But the fact remains that there are cases that require operation, and it is in distinguishing these that pyelography is so valuable. The examination should always be made, first in the reclining and then in the standing position; in this way the degree of excursion of the kidney can be determined. It will often be found that when the patient stands, the kidney sinks down into the pelvis, creating hydraulic conditions that make it very difficult for the urine to be discharged; these are the cases that demand operation and also the ones where the position of the kidney cannot be determined by palpation, because the iliac bone prevents it. Certain positions of the pelvis, the calices, and the ureters that create unfavorable hydraulic conditions are revealed by pyelography, also distentions of the calices and pelvis. These slight degrees of hydronephrosis are frequent and early operation overcomes them. Pyelography not only shows whether operation is necessary but what form of operation is best adapted to the case; ureteropyelostomy may be necessary, or simple fixation in the right position may suffice. If a previous nephropexy has fixed the kidney in a poor position, pyelography will disclose that fact.

Pyelography should really be regarded as a slight operation and should be performed with all the care that would be given to any other operation. When so performed and applied judiciously, it will be found to be of the greatest service in urinary surgery.

Casper, L.: Indications and Limitations of Pyelography (Indikationen und Grenzen der Pyelographie). Berl. klin. Wchnschr., 1914, li, 1259.

By Surg., Gynec. & Obst.

A number of cases of death from pyelography have been reported, some of which, doubtless, can justly be attributed to defective technique. recommends that no syringe be used at all, but that the collargol be allowed to flow in through a small funnel held at a height of 30 to 60 cm. above the body. The flow should be stopped as soon as the patient has a sensation of tension; but in spite of all precautions there are cases in which there are very severe symptoms from pyelography, much more serious than in any other method of diagnosis. It should, therefore, be used only after all other diagnostic methods have failed. It is not necessary in movable kidney because this condition can be diagnosed by palpation; it is useless and even harmful in kidney tuberculosis; in calculus it is useful only in forms, such as urates, that do not show in the röntgen picture. The Mayos report success in diagnosing hypernephroma by this means, but Casper had negative results in five out of seven cases. It may be of value in diagnosing tumors of the kidney, but the diagnosis can be made by a less dangerous method; namely, that of testing kidney function. If one kidney is being compressed by a tumor its functional capacity will be less than that of the sound

side. The method may be indispensable in hydronephrosis and in differentiating kidney-stones that do not show in the röntgen picture from nephritis.

Joseph is an ardent advocate of pyelography as a means of diagnosis. He has used it in over 100 cases, and 38 röntgenograms illustrate his work. He has only had three cases of colic, two of them so slight that the patients were able to go home within an hour. Just as severe symptoms often appear after catheterization of the ureters. The more serious accidents, he thinks, have been due to lack of skill and experience in using the method.

A. Goss.

Simon, L.: Value and Danger of Pyelography
(Beiträge zur Beurteilung des Wertes und der
Gefahren der Pyelographie). Beitr. z. klin. Chir.,
1915, xcv, 297. By Surg., Gynec. & Obst.

Simon has performed pyelography in over 100 cases in the past two years. He believes it is the best method of obtaining a clear picture of the size of the kidney pelvis, the method of its dilatation, the point of opening of the ureters, and the dilatation and course of the ureter. By means of röntgenography and filling the kidney pelvis with collargol, cavities which communicate with the kidney pelvis can be recognized. The exact position of the kidney can be determined and all the phases of movable kidney can be demonstrated. Partial dilatations of the ureters and diverticula of the bladder can be shown on the röntgen plate.

Though it must be admitted that diagnosis can be correctly made in many cases by catheterization of the ureters and cystoscopy without the aid of pyelography, for example, in dilatation of the kidney pelvis, yet some diagnoses cannot be made without pyelography, as in the abnormal insertion of the ureter. Though Simon admits that it should be possible to diagnose movable kidney without pyelography, yet he believes the knowledge of the dilatation of the pelvis given by pyelography indicates the best treatment.

He believes that the urologists who hold that pyelography does not give any better results than less dangerous methods are mistaken. It yields too much, he thinks, both as to diagnosis and indications for treatment, to be given up. But it has its contra-indications and should not be used indiscriminately. It should not be used when the kidney pelvis is not enlarged. Volker has shown that it is pyelography of the normal kidney pelvis that causes the fever and pain that have been attributed to the method. It is contra-indicated where there is any suspicion of a lesion of the kidney pelvis or ureter by the urethral catheter.

Besides careful technique in catheterizing the ureter, the capacity of the kidney pelvis should previously be measured. This is done by measuring the residual urine and then washing out the kidney pelvis with physiological salt solution or weak boric acid solution, which is removed slowly with a syringe. The patient is requested to make it known if he feels the slightest pain. The fluid is examined for

blood, in order to exclude any lesion of the kidney pelvis or calyx. A little less collargol is injected than the capacity of the pelvis will permit in order to avoid too great pressure. In applying the compression diaphragm, care should be exercised not to exert too great pressure on the kidney region; too much pressure has been known to force the collargol into the urinary tubules or the interstitial tissue.

Simon believes that if these precautions are carefully observed, pyelography is not dangerous.

A. Goss.

Peterson, R.: Report of a Case of Ureterocystostomy. J. Mich. St. M. Soc., 1914, xiii, 708.

By Surg., Gynec. & Obst.

The author reports a case of ureterovaginal fistula following a panhysterectomy. It was due either to ligation of the left ureter or to interference with the ureteral blood supply. After allowing time for spontaneous closure, a retroperitoneal transplantation of the ureter into the left side of the vesical base was done by the abdominal route. After separating the parietal peritoneum down to the bottom of the pelvis, the ureter was located through an opening in the peritoneum, the vaginal end dissected clear for two and a half inches, and cut. It was then split up for a third of an inch.

Through a small opening made into the bladder over a curved hæmostat in the urethra, the ureter was pulled well in by a silk ligature. The split ends were sutured some distance from the opening, the sutures being tied outside the bladder. The mucosa and muscular wall of the bladder were sewed to the ureter with fine silk. Drainage was established through the vagina. Recovery was uneventful.

If the ureteral lesion is low down, Peterson advises transplantation, but if it is high, then the two ends may be anastomosed or nephrectomy may be

Hydro-ureter, hydronephrosis, or infected kidney follows too tight coaptation, while too loose coaptation produces leakage. Retroperitoneal transplantation is preferred as the danger from peritonitis is smaller.

C. D. Pickrell.

#### BLADDER, URETHRA, AND PENIS

Benoist, M.: Cystinuria and Cystinous Lithiasis. Am. J. Urol., 1915, xi, 43. By Surg., Gynec. & Obst.

Cystin is found in urinary sediments in calculi of cystinuric subjects, probably in the blood of the same subjects (Desmouliere), and in the majority of both animal and vegetable protein matter. Among the sulphates of the urine it forms the chief constituent of one of the three groups of sulphates, which groups are the inorganic phenolsulphates and the incompletely oxidized sulphur compounds comprising cystin chiefly. The author discusses the chemistry, the most practical point in the discussion being a description of the simple test serving to identify the compound; to wit, cystin will burn

completely on a platinum plate, melting while burning, emitting a blue flame and an odor like garlic.

According to Pousson there have been only about fifty cases of cystin calculi reported, and of these all but a very few are bladder stones. Cystinuria is more common.

The cause of cystinuria is obscure. Heredity is an important factor. Pfeiffer reports a father, aged 40, and two young sons all exhibiting cystinuria. Pletzer's theory that cystinuria is the result of a vegetable diet rich in legumes lacks essential support. Desmouliere holds that cystinuria results from glandular disturbances, the liver in particular, resembling the manifestations of gout, diabetes, etc.

Morris, Arcelin, Vinnay, Lamy, and others have demonstrated the opacity of cystin stones to the röntgen ray, due no doubt to the small quantity of calcium phosphate present. One small cystin stone measured a hardness of 4 to 5 Benoist.

For treatment exercise in the open, mechano- and

balneotherapy are recommended.

Abstention from cystin foods, eggs, certain types of vegetables and certain legumes is recommended. Gautier advises control over the bread intake, inasmuch as he considers the contained nucleins a prolific source of cystin. Restriction of animal foods, especially game and preserved meats, as well as condiments and spices, is urged. In the line of medical treatment diuretic waters and certain alkalies are advised, because of the belief that alkalies render cystin soluble (notably ammonium carbonate).

Louis L. Ten Broeck.

Pearse, R.: Some Advantages of Litholapaxy over Lithotomy. Canad. Pract. & Rev., 1915, xl, 10. By Surg., Gynec. & Obst.

Pearse briefly discusses the advantages of litholapaxy over cystotomy for the relief of vesical calculus. Among the advantages of the operation are: (1) a convalescence of only a few days, (2) the avoidance of a wound which is a source of annoyance and danger, and (3) the ability to repeat the performance in the case of recurrent stone, without any more difficulty with the last operation than with the first.

Some of the contra-indications of litholapaxy are dwelt upon, and among them are mentioned a stone too big to be grasped by the lithotrite, stones lying in a diverticulum, and marked enlargement of the prostate. In order to eliminate these factors, a preliminary cystoscopy should be done. The chief dangers of the operation, and these are slight in skilled hands, are injuries to the bladder and urethra. He mentions two cases in which litholapaxy in young infants has been successfully performed.

J. DELLINGER BARNEY.

Seri, G.: Papilloma and Primary Simple Ulcer of the Bladder. Internat. J. Surg., 1914, xxvii, 403. By Surg., Gynec. & Obst.

Seri describes the simultaneous occurrence of a papilloma and a primary simple ulcer of the bladder.

Both conditions were diagnosed by cystoscopy

previous to operation.

The papilloma was treated by excision, a rather striking procedure when one considers the ease and simplicity with which papillomata can be removed by treatment with high-frequency currents.

In his discussion of primary ulcerations of the bladder, the author considers, first, the so-called chronic ulcer, which is generally found in the neighborhood of the trigone; second, acute perforating ulcer, which is most often found at the level of the posterior retroperitoneal wall. While very little is known as to the etiology and pathogenesis of these diseased conditions, it would seem that trophic disorders and infective or toxic factors are of great importance.

În the author's case the ulcer closely resembled ulcer of the stomach. There was absence of any sign of inflammation or disease of the bladder or neighboring organs of the genito-urinary tract to which the ulcer could have had any relation.

He does not think there was any relationship between the ulcer and the papillomata, the presence

of both lesions being a coincidence.

In view of the fact that simple ulcer of the bladder is a rare condition, microscopical reports of sections made from the ulcer would have been of added interest. HERMAN L. KRETSCHMER.

Roberts, W. O.: Hernia of the Urinary Bladder. Louisville Month. J., 1915, xxi, 260.

By Surg., Gynec. & Obst.

In the literature of the world only about 400 cases of hernia of the bladder have been recorded. almost always occurring as a complication of an inguinal or femoral hernia. Primary hernia of the bladder is a pathological curiosity. The accident is more common in the male, almost invariably of the inguinal type, than in the female, in whom it is encountered just as invariably in the femoral type of hernia. In approximately 350 cases there were 275 inguinal and 50 femoral, the remainder being divided among other varieties. An acquired weakness (from atony, prolonged or overdistention of the bladder wall), some congenital malformation, and a true diverticulum, are some of the reasons given for the occurrence of the condition.

There are no characteristic symptoms, although Cheeseman suggests the partial disappearance of a hernial sac after micturition and the causation of a desire to urinate upon pressure on the tumor as the most constant. Only 30 of 192 of his cases, how-

ever, had bladder symptoms of any kind.

The presence of such a bladder hernia has in no instance caused the patient serious discomfort. In practically every instance the condition has not been recognized until operation, and of the 192 cases of Cheeseman the bladder was recognized and avoided during the operation in only 47 cases, its presence in the other cases being realized only after injury. The bladder protrusion usually lies to the inner side or posteriorly to the true hernial sac and is separate from the spermatic cord. Its pedicle runs downward behind the symphysis. unusual amount of fat is commonly present with it in the hernial sac. These features, the muscular character and size of its pedicle, and fluctuation suggest its existence to the operator, who can then readily make an accurate diagnosis by inserting a catheter or sound into the bladder.

Roberts reports two cases of strangulated hernia, both in men and in the inguinal ring, each complicated by bladder hernia. In neither of the cases was the condition recognized before operation.

FRANK HINMAN.

Barnett, C. E.: Urethral Stricture; Cure Preceded by Suprapubic Cystotomy. Urol. & Cutan. Rev., 1915, xix, 68. By Surg., Gynec. & Obst

Either external or internal urethrotomy for tight permeable strictures increases the amount of cicatrix and necessitates prolonged subsequent dilatations. For cases of this type, especially if associated with renal destruction from back pressure, better results can be obtained by a preliminary suprapubic cystotomy under local anæsthesia. Three or four days later a filiform is passed through the stricture into the bladder and fixed in the urethra. Each second day a filiform is added until a No. 12 (F) soft rubber catheter can be passed and tied to a single stiff projecting filiform left in situ. The catheter is blocked to prevent the drainage through it lessening the adhesive. Every second or third day a size larger catheter is tied in until a No. 27 or 30 is reached. Thereafter the urethra is dilated by sounds or by a Kohlmann dilator up to No. 40, which latter size should be employed monthly for a year. An effort is made to keep the urine neutral and the bladder is irrigated daily. Hypodermatic injections of autogenous vaccines may be employed after renal function is restored to 50 per cent. By this suprapubic method the stricture region is kept dry during the period in which the catheter is exerting pressure necrosis. J. B. CARNETT.

Waters, C. A., and Colston, J. A. C.: A Report of Three Cases of Fibrosclerosis of the Penis Treated by Röntgenization Without Improvement. Surg., Gynec. & Obst., 1915, xx, 41.

By Surg., Gynec. & Obst.

The authors report in detail the röntgen treatment of three cases of fibrosclerosis of the penis with no appreciable improvement after the most intensive irradiation.

The frequent coexistence of fibrosclerosis with diseases of metabolism, chronic rheumatism — as in their cases—gout, diabetes, etc., certainly suggests that there is a definite relationship of the disease

with disturbances of metabolism.

The disease arises in the tunica albuginea, being formed solely from fibroblasts which surround the smaller vessels and are entirely without the association of inflammatory elements. The first stage occurs as a cellular proliferation in the tunica albuginea, gradually replacing the elastic fibrils which are normally present there, and the process may continue to the development of osteoblasts from the connective-tissue fibrils, thence to true bone formation. It may occur as a result of hæmorrhage into the tissue, and it may be of specific origin.

Posner first suggested treatment by röntgenization and Bernasconi reported the first cure by

röntgen irradiation.

Zur Verth and Scheele reported three cases treated by röntgenization, two of them without improvement; the third case showed symptomatic improvement and the indurated area smaller, but still present after one year. Cases of spontaneous regression occur, and it is cases of this type that have been reported as cured.

A confusing factor which may lead to the premature report of a cure after röntgenization is the infiltration of the surrounding tissues due to the irradiation which tends to obliterate the outlines of the sclerosis and which occurred in Case 1.

In this case the Wassermann reaction was negative. Röntgenization was given over the anterior and posterior surfaces of the penis and daily doses of 2 H and later on 3.5 H for about 10 to 15 days, giving a total dose of 30 H, then a rest of several weeks, after which treatment was resumed. This patient received sixty-two irradiations during a period of 4 months. Case 2 received forty-four 3.5 H doses over a period of 4 months. Case 3 received eleven doses.

Tubes of 6 to 8 Benoist with the Sabouraud-Noire and Holzknecht radiometric system was employed, 2 to 3 mm. aluminum filters being used. Three minute treatments, using 8 to 10 milliamperes, were given. The reactions noted were never more than a very mild blush, and many months after treatment was stopped the patients reported no evidence of röntgen reaction.

The conclusions reached by the authors are:

1. Intensive rontgenization has apparently no temporary, and certainly no permanent, effect on fibrosclerosis of the penis.

2. The infiltration of the surrounding tissues under intensive irradiation tends to lead to erroneous observations unless careful and repeated examinations are made.

3. Operative treatment consisting of simple and complete excision with as little hæmorrhage as possible offers the best prospect for a cure.

#### Randall, A.: Endoscopic Treatment of Nocturnal Pollutions. J. Am. M. Ass., 1915, lxiv, 48. By Surg., Gynec. & Obst.

The author has found in his treatment of patients complaining of nocturnal pollutions, that on endoscopic examination of the posterior urethra, varying degrees of pathologic changes, either in the walls of the urethra itself or of the colliculus, are present. Among these changes are a general varicose condition, polyps, retention cysts, and evidence

of glandular hyperplasia. The author believes that the main causes of these pathologic changes are masturbation or previous posterior urethritis. He has treated these cases with varying strengths of silver-nitrate solutions with good results. Removal of the polyps and cure of the urethritis has produced a cessation of the pollutions. He finds that frequently the greatest benefit is demonstrated a month or more after the termination of the treatment.

H. L. Sanford.

#### GENITAL ORGANS

Brown, R.: Sarcoma of Testicle. South. Calif. Pract., 1915, xxx, 49. By Surg., Gynec. & Obst.

The early and definite diagnosis of sarcoma of the testicle is imperative on account of the usually extremely rapid and extensive dissemination occurring in the majority of cases by the lymphatic streams. A favorite location for arrest of traveling sarcoma cells is in the nodes in the neighborhood of the renal veins, which naturally obtrudes great difficulty in the matter of their removal. Excepting the very common forms of intrascrotal enlargement, gonorrheal epididymitis, orchitis of the acute infectious type, hydrocele and the rarer conditions, benign tumors, cysts, and hæmatoceles, the enlargements of the testicle fall into the three classes: tuberculosis, syphilis, and malignant. The starting point of sarcoma is in the mediastinum testis and may be either the round or spindle-cell type. No age is exempt, but it usually occurs between the ages of 25 and 45.

In tuberculosis urinary symptoms are common and there may be nothing of note about the testis, but the epididymis is sensitive and is frequently nodular, as may be also the seminal vesicles and prostate, but there is no enlargement of the inguinal glands. Of great aid is a positive tuberculin reaction, or the presence of tubercle bacilli in the urine. In syphilis the testis is frequently enlarged with little or no involvement of the epididymis, and, as in tuberculosis, the enlargement is slow and never reaches the size usually attained by malignant tumors where the growth is also more rapid. Sarcomata frequently give markedly positive Wassermanns and the epididymis may feel entirely normal.

In closing, the author makes a strong plea against delays in the diagnosis of any enlargement of the testicle, and advises free and extensive removal when the presence of malignancy is established.

HARRY D. ORR.

Barker, L. F.: Abnormalities of the Endocrine Functions of the Gonads in the Male. Am. J. M. Sc., 1915, cxlix, 1. By Surg., Gynec. & Obst.

The author states that the male sexual glands are divisible into at least two parts: (1) a generative part proper, producing the sperm cells, and (2) an internal secretory part (the interstitial cells of Leydig), producing the hormones upon which depend (a) the development of the genital tract

in the embryo; (b) the development of what John Hunter designated as the "secondary sexual properties" of the male; namely, changes characteristic of the male, but "which take place only in parts that are neither essential to life nor generation, and which do not take place till toward the age of maturity," and, perhaps (c) in part, the neural states associated with libido sexualis and potentia coeundi.

Two cases are cited: The first case was an eunuchoid, showing signs of hypogenitalism and of dyshypophysism. The patient was markedly effeminate, had a smooth satiny skin, scanty hair, the facies and general attitude being typical of hyperpituitarism. His breasts were large and of the effeminate type. He had bradycardia and slight

hypothermia.

The second case was of the dwarfism type marked by unilateral cryptorchidism, azoöspermia, hypergenitalism, tuberculous polyserositis, and general miliary tuberculosis. The chief interest in this case is the histology of the testicles, which was as

follows:

The tunica was thickened a little and showed a little evidence of chronic inflammation. The seminiferous tubules were uniformly arranged, of small size, and with greatly thickened basement membranes. They contained only one type of an undifferentiated cell, in general of spindle or cubical shape, with the long axis pointing toward the lumen. The nuclei were large and vesicular. The protoplasm was filmy. There were no spermatozoa. The basement membrane in places had undergone hyaline degeneration. Again, the entire tubule showed a uniform hyaline metamorphosis. There were some corpora amylacea probably representing deposits in degenerated tubules. Some of these showed calcium impregnation.

The striking thing in the sections was the uniform increase in the interstitial cells of the testicle. They were increased relatively and perhaps even absolutely. Many of them showed very distinct, fine, yellow granules of pigment in their protoplasm. The nuclei stained well. Some of these masses of interstitial cells made up strands and columns as large as the shrivelled tubules. The adrenal cortex was rather thick and showed perhaps a little increase in the width of the middle zone of the cortex. The inner zone of the cortex showed considerable pigment deposit in its cell column, perhaps slightly more than normal. The medullary tissue is conspicuous and normal in appearance. The bloodvessels are engorged to a considerable extent.

More and more we are forced to realize that the general form and external appearance of the human body depend to a large extent upon the functioning, during the early developmental period (and later), of the endocrine glands. Our stature, the kinds of faces we have, the length of our arms and legs, the shape of the pelvis, the color and consistency of our integument, the quantity and regional location of our subcutaneous fat, the amount and distri-

bution of hair on our bodies, the tonicity of our muscles, the sound of the voice and the size of the larynx, the emotions to which our exterior gives expression — all are to a certain extent conditioned by the productivity of our hormonoprœiotic glands. We are simultaneously, in a sense, the beneficiaries and the victims of the chemical correlations of our endocrine organs.

The data we are accumulating regarding these chemical correlations are not only theoretically interesting but are practically very important. More than ever before is the minute examination of the external appearance of the body—the habitus—of significance for the practicing physician who desires to make accurate diagnoses. In this paper the author has paid especial attention to the function of the gonads. It is probably no accident that, as one of the best workers in this field has expressed it, the "organs which are for the preservation of the species and the continuity of life (also) possess a modelling influence upon the individual bearer of life."

V. D. LESPINASSE.

## Reynolds, W. S.: Vaccines in Colon Epididymitis. Urol. & Cutan. Rev., 1915, xix, 69.

By Surg., Gynec. & Obst.

Reynolds reports a case of epididymitis in which pure culture of colon bacillus was found. The general reaction to the condition was marked. There were practically no reactions after injections with autogenous vaccines and the vaccine was apparently of no use in curing the case. The epididymis under expectant treatment finally cleared up, although for two months thereafter there were colon bacilli in the urine.

J. S. EISENSTAEDT.

# Squier, J. B.: Drainage of Seminal Vesicles. N. Y. M. J., 1915, ci, 333. By Surg., Gynec. & Obst.

Squier gives a report of 50 consecutive operations upon the seminal vesicles during a period of two years. The method used was that of Fuller with certain modifications by the author. He divides the cases into three classes according to predominating symptoms: (1) urethral discharge and pyuria; (2) perineal pain; (3) arthritic symptoms or other systemic evidence of chronic infection. Naturally certain minor symptoms, which are often varied and manifold, may be common to all of these classes.

The pathological conditions, local and general, resulting from vesicular infection are described. In 96 per cent of cases the vesicles are likely to harbor a chronic infection from the tortuosity of their lumen and the presence of diverticula. Mixed infection frequently occurs, as shown by bacteriologic examination of smears and cultures of vesicular contents. On this point the author concludes that (1) with the exception of acute suppurative cases the gonococcus is regularly absent, (2) there is an almost constant growth of pyogenic bacteria.

The possibility of mutation of the gonococcus, according to the theory of Rosenow, and the devel-

opment of a streptococcus infection is suggested. Actual local changes may be intrinsic: i.e., dilatation and distention with purulent secretion, etc., interstitial spermatocystitis; or extrinsic, consisting in more or less diffuse perivesiculitis in the region about the vesicles affecting the terminal uterers,

bladder, prostate, and rectum.

The technique of the operation is essentially that of the perineal prostatectomy of Young up to the point of exposing the prostate. Then the dissection of the rectum is carried higher until the vesicles are exposed, facilitated by traction sutures through the base of the prostate at its junction with the bladder. By carefully stripping up the fascia of Desnonvillier the vesicles are preserved uninjured and can be inspected. Thorough drainage by incision of the vesicle, ampulla of the vas, and any diverticula present is necessary. Each vesicle is drained by a rubber tube of 20 F. caliber, and the adjacent space by gauze wicks. The operation is completed by careful restoration of the perineum by suture, the drains issuing at the angles of the incision. Care must be taken not to injure branches of the internal pudic nerve, in order to avoid post-operative loss of erectile power.

Of the total number of cases operated on 68 per cent were cured, 24 per cent improved, and 8 per cent unimproved. The best result was in the group with arthritic symptoms, 70 per cent of which were cured.

H. Binney.

## Fuller, E.: Surgery of the Seminal Vesicles. Med. Rec., 1915, lxxxvii, 134. By Surg., Gynec. & Obst.

The author's article is a reply to criticisms that have been advanced against his work on the seminal vesicles. He denies that seminal vesiculotomy is a serious operation, stating that the mortality is practically nil, being one in more than 700 cases. He also states that the educated finger in many cases is as efficient and many times more efficient than direct vision, quoting Guyon, who states that no one who could not see, as it were, with his finger could be an efficient genito-urinary surgeon. The author emphatically refutes the criticisms that the operation is bloody and that it disturbs the functions of the perineal muscles. V. D. LESPINASSE.

# Gunn, L. G.: Carcinoma of the Prostate. Med. Press & Circ., 1915, xcix, 114. By Surg., Gynec. & Obst.

Gunn's article is chiefly a review of the opinions of others on several aspects of the question of prostatic cancer. He himself believes that cancer of the prostate is fairly common, and that it occurs in at least 7 per cent of all hypertrophied prostates. Adenocarcinoma is the type usually found.

Gunn raises the question whether the malignant process is usually preceded by adenomatous changes or not. He believes that cancer may occur without hypertrophy being present originally, but says that

the percentage of such cases is small.

Early diagnosis is most important. The three

most important considerations in making the diagnosis are:

r. The occurrence of pain without obvious retention of urine.

2. A disproportion between the symptoms complained of and the condition found on rectal examination.

3. The rapid onset of symptoms, progressing as far in six months as an average case would in two or three years.

G. G. SMITH.

#### MISCELLANEOUS

Peterkin, G. S.: Urological Methods of Diagnosing Surgical Conditions of the Urinary Organs Which Obviate the Use of the Knife as a Diagnostic Instrument. Am. J. Urol., 1915, xi, 11.

By Surg., Gynec. & Obst.

Peterkin shows that the modern urologist who wishes to do scientific work must depend not upon one method alone, but must use all of the late methods of diagnosis - not only the cystoscope and its accessories, but the clinical and X-ray laboratory methods as well. Before studying pathologic conditions in the living the value of studying pathologic specimens is demonstrated by showing radiographic findings of kidneys taken post-mortem which illustrate the value of noting irregularities in kidney pelves not only in different individuals but in the two pelves in the same individual, so as to differentiate pathologic from normal pyelographic findings. The value of this knowledge of irregularities in pelves is also well brought out both in operating and diagnosing renal calculi. Pathologic specimens of infantile kidney, horseshoe kidney, and normal adult kidney, with all the variations in shape, size, and arrangement of the pelvis and bloodvessels, are shown and contrasted with the popular conception.

A series of cases of calculi, movable kidney, tumors, pyelitis, and hydronephrosis are shown, demonstrating that all methods known to modern urology—cystoscopy, the use of ureteral catheterization, cultures, and radiography—must be employed

before a correct diagnosis can be made.

The case of a steel riveter with kidney-stone filling the renal pelvis whose symptoms were vesical and who had been treated for two years for uncomplicated cystitis, and who, in spite of the continued jar of his occupation, never had a kidney pain, well illustrates one pitfall—the absence of pain in many kidney conditions. Other cases of stone, tumors, movable kidney, and kidney infections show the need of catheterizing with alternating bismuth X-ray catheters and the value of pyelography and radiography.

In interpreting radiographs a fixed point in the anatomy, e.g., the spine of the first lumbar vertebra, is located; and by taking pictures standing and lying, on inspiration and expiration, the amount and direction of movement, the size and shape of the kidney, and differentiation between stone and other

conditions are shown; also the location of stone, whether within the kidney or not is determined.

Pyelography shows the condition of the pelvis, the segregated urine, the functional power of each kidney, and any infection present in either. Both kidneys must be catheterized in order to determine which is affected, as the well kidney may be the seat of pain due to compensatory functioning, or both kidneys may be affected and only one give symptoms. Likewise, the centimeter catheter shows the exact position of stone in the ureter. After locating the stone it may be removed easily by the use of an umbrella probang ureteral catheter, which collapses upon entrance but expands upon withdrawal, and so pushes the stone before it into the bladder. This operation is in marked contrast to the major operation of cutting down upon the ureter.

The author concludes by emphasizing that to obtain maximum results and the greatest percentage of cures urologic work must be systematized and organized, so as to get the highest value from all means of diagnosis.

London, J.: A New Visual Lithotrite. Med. Rec., 1915, lxxxvii, 197. By Surg., Gynec. & Obst.

The lithotrite is based on two principles: (1) its large size, 30 French; and (2) making the opening in the male blade as small as possible, as the mechanical strength of the lithotrite varies in direct proportion to the thickness of the tube.

The male blade is 15.5 inches long, tubular in character, the bore admitting a cystoscope, size 15 French. Upon its upper surface the shaft is strengthened by a bar which terminates at its distal extremity in the male jaw. This is one inch in height placed at an obtuse angle to the shaft and terminating in a projection which is parallel to the base line and extending for three eighths inch beyond the body of the jaw.

There is no spur at the base line of the male jaw, which permits a most comprehensive visual control of the entire male jaw at all times. In order to obtain the wedge action used in crushing large hard stones, the body of the jaw carries six alternating triangular notches, three on each side. The terminal projection is obliquely cut at its distant end in order that this also may exert the wedgelike action. At the proximal end of this

shaft of the male blade the bar is thicker and carries a ratchet, which is worked by a pinion. The small bar is also attached at this proximal end to serve as a thumb rest. The female blade is composed of a tubular shaft 10.5 inches long, a steel cylindrical handle at its proximal end and at its distal end the female jaw.

When the lithotrite is closed it is 16 inches long, 30 French in circumference. The opening through the male blade being contiguous to it and in a straight line with the opening at the base of the female jaw, permits the irrigation and distention of the bladder by a fluid introduced through the instrument itself without removing it. When only the front part of the jaws are in opposition there is quite a fenestrum between the main bodies of the respective jaws, and the cystoscopist can actually see the toothed surfaces of the male jaw in its entirety even with the terminal parts of the jaws touching, and the bladder wall may be observed, to make sure that it will not be included between the blades. This lateral fenestrum allows the fragments to be discharged laterally, while the two perforations in the female jaw afford additional facilities to prevent impaction.

After the lithotrite has been introduced into the bladder the latter is distended with fluid, introduced through the channel above described, and the cystoscope inserted. In the first position the beak of the lithotrite points upward with its jaws closed, while the cystoscope projects beyond the opening in the female blade and explores the bladder. When the stone is located the beak is turned sideways, opened over the site of the calculus, and the latter is grasped. The cystoscope is slightly withdrawn and the stone crushed, at which time the beak is turned sideways or downward. The cystoscope is arranged on a straight stem with a working length of 16 inches. It is 15 French in size. The objective has a focus of 1.5 inches with its axis directed 15 degrees forward from the right angle with a corrected image.

The mechanical features are the large size of the instrument with the smallest feasible bore even for the cystoscope. The visual control of the male jaw is absolute when the front part of the blades are in contact. Among the advantages of the instrument are the simplicity of its construction and the ease with which mechanical power is applied.

HENRY KRAUS.

### SURGERY OF THE EYE AND EAR

EYE

Verhoeff, F. H.: Cscleral Puncture for Expulsive Subchorioidal Hæmorrhage Following Sclerostomy; Scleral Puncture for Post-Operative Separation of the Chorioid. Ophth. Rec., 1915, xxiv, 55. By Surg., Gynec. & Obst.

Verhoeff reports a case in which puncture of the sclera, often after a subchorioidal hæmorrhage, resulted favorably. In the cases which had occured previously at the Massachusetts Charitable Eye and Ear Hospital the eye had always been lost. Hæmorrhages of this type most often occur after operation on glaucomatous eyes. Pathologically he has found that the hæmorrhage is chiefly confined to the subchorioidal space, pushing the chorioid and retina inward and compressing the vitreous. It may break through the chorioid and force the retina out

of the eye.

In the case reported a sclerostomy was done on an eye with a tension of 72 mm. and a deep cup; there was marked field retraction, but 20/40 central vision. The hæmorrhage occurred while the flap was being sutured and about one-half of the vitreous was lost. The wound was closed and the patient put to bed. Four hours later three punctures were made in the sclera with a Graefe knife, but though the blood flowed out the globe became hard after the withdrawal of the knife. Severe hæmorrhages occurred twenty-four hours later. There was gradual improvement until on the twenty-fifth day the tension was normal, media clear, and fundus normal except for glaucomatous cup. Vision 20/200.

He also reports a case of persistent post-operative separation of the chorioid, which was relieved by scleral puncture.

EARLE B. FOWLER.

Reber, W., and Lawrence, G.: Gonorrhoeal Iritis as a Manifestation of an Old Latent Gonococcæmia; Diagnosed by the Complement-Fixation Test; Treatment with Bacterins. Ophth. Rec., 1915, xxiv, 1. By Surg., Gynec. & Obst.

Three cases of iritis are presented in which, although the clinical findings were obscure, the complementfixation test established an old latent gonococcæmia, which yielded promptly to bacterin treatment.

Cases I and 2 were males between the ages of 36 and 40, in whom the iritis manifested itself in from 5 to 15 years after infection. In Case 3, a female, aged 56, the time of infection was not obtainable. In all 3 cases a Wassermann was negative and in Cases I and 2 urinalysis was negative, Case 3 showing some albumin, numerous pus-cells, and many casts. Case I received three injections of mixed bacterin in a period of fifteen days, resulting in freedom from pain and vision of 5/5. Case 2

was given Neisser sensitized bacterin with prompt results. Case 3 rapidly improved under mixed serobacterin treatment, vision reaching 20/20.

The authors show by statistics that gonorrhœal iritis is more frequent than rheumatic iritis and they recommend the bacterin treatment even though the complement-fixation test and Wassermann, which should be employed in all cases of iritis as an aid to proper study and treatment, be negative. They consider that "sensitized bacterins" offer the speediest results, although non-sensitized ones confer a longer immunity.

C. A. Maghy.

Reber, W.: The Influence of Heredity in the Development of Strabismus. Ophth. Rec., 1915, xxiv, 59. By Surg., Gynec. & Obst.

Reber shows that in his series of cases of strabismus, heredity played a part in 68 per cent. These were all private cases, therefore more accurate histories could be obtained. Of the 68 per cent 47 cases were of direct heredity; 11 were of direct plus colateral, and 9 per cent of colateral. These figures emphasize the importance of special attention being directed toward the development of eye movements and the immediate correction of any abnormality in families in which squint has been known to occur.

EARLE B. FOWLER.

Curtin, T. H.: A Case of Retinal Detachment.

Ophth. Rec., 1915, xxiv, 68.

By Surg., Gynec. & Obst.

Curtin reports a case of retinal detachment in which replacement occurred and vision returned to 20/30 (corrected) following sclera trephine and aspiration. The trephine (2 mm.) was done as far posterior as possible between the recti. There was little reaction following, and two days later a needle was introduced through the opening penetrating the choroid and twenty-five minims serous fluid was aspirated. The fundus was examined at once and the retina was found to be in place. One month later the whole condition remained satisfactory, vision 20/30; field normal; few vitreous opacities; and some retinal cedema over the trephine wound. At no stage was there a marked reaction.

EARLE B. FOWLER.

Green, A. S., and L. D.: A New Eye Speculum.

Ophth. Rec., 1915, xxiv, 65.

By Surg., Gynec. & Obst.

This article covers a discussion of the "lid problem" and the disadvantages of the ordinary lid speculum; the relation of the patient; the description, manner of use, and advantages of the new instrument, and its value in cataract extraction.

The new instrument differs somewhat from the ordinary speculum in form and in the angle of the blades, and in addition has a large handle extending at an obtuse angle down toward the patient's chest. With this the lids can be held entirely away from the globe throughout the operation without interference with the manipulation. The authors are using this throughout the entire Smith-Indian operation with good results. EARLE B. FOWLER.

#### EAR

Beck, J. C.: Diagnosis of Intracranial Complications in Diseases of the Middle Ear and Accessory Sinuses of the Nose. Illinois M. J., 1915, By Surg., Gynec. & Obst.

The diagnosis of the following intracranial complications are considered: (1) meningitis—serous, localized septic, and diffuse septic; (2) sinus thrombosis; and (3) brain abscess.

As to the cardinal symptoms of any intracranial

complication, the following are mentioned:

1. Pain or headache-very persistent and quite intense. The author states that the recognition of this symptom has helped him more than any other in suspecting intracranial trouble.

2. Nausea and vomiting—quite constant espe-

cially early in the disease.

3. General septic appearance — quite manifest.

4. Disturbance of vision due to choked disc. 5. Disturbance of temperature, pulse, and respiration.

6. Definite focal symptoms.

Results of blood and spinal fluid examinations.

Röntgenographic findings.

Exploratory operation and treatment.

Serous meningitis gives the following symptoms or signs: Increasing headache, at first localized, then diffuse; rolling of eyes, especially upward; rise of temperature and increase of pulse and respiration rate; loss of appetite; nausea, and emunctories sluggish; irritability and restlessness; the neck is drawn backward; the leg is drawn up to the thigh and the thigh to the abdomen.

The following signs are positive: Kernig's, Babinski's, Brudginski's, Gordon's, Oppenheim's, and Chaddock's. Unconsciousness follows; the pupils are sluggish, then finally dilated; a choked disc may be present. Spinal puncture shows the fluid to be under pressure, and complete examination of the fluid reveals an increase of cells usually

leucocytes, but no micro-organisms.

The Lange test is positive; albumin in excess;

sugar present; localized septic meningitis.

In addition to the above, the spinal fluid may contain micro-organisms. Localized headache is an important symptom, and the temperature is

In diffuse septic meningitis the graver symptoms of sepsis are added to those of the serous variety. The spinal fluid is turbid; sugar reaction negative; acidity increased; also cholin.

Sinus thrombosis is usually associated with acute infections of the ear. Chills and fever of the septic type are of most importance. The blood picture shows a high leucocyte count and the polymorphonuclear type in excess; bacteræmia. There is a choked disc which is increased by compression of the healthy internal jugular vein. Exploratory exposure of the sinus is of distinct value, providing that a sufficient area is uncovered.

Brain abscess is most frequently associated with chronic suppurations of the middle ear and mastoid. The paramount symptom is great pain in the head: next come focal symptoms, due either to irritation or paralysis; the cerebrospinal fluid is increased; unequal pupils and choked disc are present. The larger the abscess the slower the pulse and respiration. Projectile vomiting is frequent. Röntgenograms are of uncertain value. Exploratory operation is justifiable.

In conclusion the author quotes from Prof. Newmann as to the differential diagnosis between meningitis, sinus thrombosis, and brain abscess:

"A patient who has meningitis is one that wishes to be left alone and allowed to sleep although when aroused is not particularly irritable. If he has brain abscess then he is constantly very irritable and difficult to manage; while a patient who has sinus thrombosis, when he is free from the chills and fever, is very pleasant, apparently well."

Отто М. Котт.

### Jobson, G. B.: The Ocular Symptoms of Brain Abscess and Sinus Thrombosis of Otitic Origin. Abscess and Salar Laryngoscope, 1915, xxv, 7. By Surg., Gynec. & Obst.

In the author's opinion the absence of ocular symptoms does not justify the exclusion of intracranial involvement complicating aural disease, but when considered in conjunction with other symptoms it is a valuable guide to a timely operation. Choked disc and optic neuritis are the earliest and most important evidences of intracranial involvement. Optic neuritis requires time for its development and may be progressing when other signs and symptoms of brain abscess are in abeyance, and while its presence does not make diagnosis certain, neither does the absence of optic neuritis negate cerebral abscess. Pathologic eye changes occur in about two-thirds of the cases of sinus thrombosis of otitic origin.

The author reports the case of a woman, aged 28, who had had chronic suppurative otitis media from childhood with acute mastoid symptoms. At operation, an extra dural abscess and a perisinus abscess were evacuated, although the lateral sinus was not thrombosed. Four days later the jugular vein was exsected on account of thrombosis, although the lateral sinus was negative. Four weeks after operation the patient alternated between irritability and dullness; examination of the left eye showed a choked disc, which was followed by the left eye becoming greatly proptosed, the lids cedematous, cornea dry and hazy, and the fundus of the right eye showed slight optic neuritis. Exploration for a left cerebral abscess was negative, and two days before death the patient developed beginning left hemiplegia with the right pupil dilated and fixed. Autopsy revealed a right temporosphenoidal abscess.

ELLEN J. PATTERSON.

#### McLoone, J. M., and Nelson, R. M.: Mastoid Operation Without Artery Forceps or Ligatures. J. M. Ass. Gaz., 1915, iv, 276.

By Surg., Gynec. & Obst.

The method employed is as follows:

- 1. Have two Allport retractors ready for instant use.
- 2. With a scalpel outline lightly in the skin the exact form and extent of the proposed incision.
- 3. With a scalpel make a deep cut through the soft parts down to the periosteum, following the previously outlined skin incision.
  - 4. Quickly incise and elevate the periosteum.
- 5. Insert the retractors with more than ordinary pressure.

The advantages claimed for this method are (1) a saving of valuable time; (2) eliminating trauma of soft tissues due to forceps and ligatures; hence (3) earlier healing of wound.

The authors do not advise the use of this technique in children because of the softness of the skull and the danger of pushing the scalpel through into the brain.

Otto M. Rott

# Kerrison, P. D.: The Treatment of Advanced Tympanic Deafness. J. Am. M. Ass., 1915, lxiv, 199. By Surg., Gynec. & Obst.

The condition discussed in this paper is that due to ossicular rigidity of intratympanic origin.

Exclusive of suppurative lesions, the following conditions are mentioned as not infrequently leading to ossicular rigidity.

r. As a result of prolonged subacute exudative inflammation of the tube and tympanum, the tubotympanic mucosa undergoes marked thickening.

- 2. As a result of prolonged tubal catarrh with deflation of the tympanum, permanent contraction of the tensor tympani muscle may react unfavorably on the movements of the stapes by reducing the mobility of the entire ossicular chain.
- 3. In the course of a chronic or subacute tympanic inflammation of long standing, with occasional acute exacerbations, adhesive bands are formed between the head and crura of the stapes and the walls of the oval niche, or between the head and crura of the stapes and the long arm of the incus.

Similar bands may bind the long arm of the incus to the inner tympanic wall, or, occurring in the vault, may bind the head of the malleus and body of the incus to the outer bony wall of the attic.

Kerrison regards a reversed or negative Rinné as evidence of stapedial fixation, and emphatically states that the frequent routine use of catheter inflation as a means of correcting ossicular rigidity is based on a false conception of the mechanism involved.

He cites a few experiments in the direct examination of the ossicular chain by passing a blunt hook through an incision of the drum membrane behind the hammer handle and engaging the hammer handle with the hook and making gentle traction. In some cases there was great temporary improvement in hearing; in others none; but these latter cases emphasized the utter futility of inflation in influencing the rigidity, when even direct traction on the malleus failed to loosen the ossicles. Because the ultimate results have proved too uncertain and of too negative a character, the author does not mention this procedure as a therapeutic measure for the relief of deafness.

In the author's experience the following treat-

ments have produced the best results:

In chronic tubal lesions argyrol and silver nitrate are applied locally. Yankauer's method of first cocainizing the entire length of the tube and then making direct application of a 25 or 50 per cent solution of argyrol throughout the entire length of the tube gives the best results.

In advanced tympanic deafness a few inflations may help, but because of the danger of overdoing the inflations and the dire ultimate results of such excessive interference, the author believes that more actual and permanent gain functionally can be accomplished through treatment directed solely to the diseased lining membrane of the eustachian canals, reserving the catheter for an occasional diagnostic and therapeutic aid.

As to the non-surgical treatment of ossicular rigidity, the author lays stress upon the exercising of the conducting apparatus in a normal manner; viz., (1) the membrana tensa should be made to execute movements similar to those induced by sound waves; (2) the number of vibrations per second should bear some definite relation to that note in the musical scale which marks the lower limit of the patient's tone perception.

This can be accomplished by tuning forks with a greater amplitude of vibration, but of the same and lower pitch than those which show that the patient's hearing is impaired. Otto M. Rott.

### SURGERY OF THE NOSE, THROAT, AND MOUTH

#### NOSE

Beck, J. C.: Ultimate Results of Operations for Chronic Sinus Disease, Chronic Tonsillar and Tonsillar and Adenoid Disease, and Chronic Diseases of the Middle Ear. J. Ophth., & Oto-Laryngol., 1915, ix, 7, 41. By Surg., Gynec. & Obst.

The author calls attention to the factors to be considered in making such a report of value:

1. A thorough and complete history of each case up to the time of discharge from treatment, and, if possible, subsequently by what is termed the "follow-up" method.

2. Careful and painstaking observation during

the entire course of treatment.

3. An absolutely truthful report.

4. Consideration of the fact whether the patient was treated and cared for subsequent to operation by trained specialists and assistants.

5. Whether the patient was one in private

practice or in a charity institution.

6. One of the most important factors is to ascertain the pathological condition present.

7. The general or constitutional condition of the patient.

8. Hygienic surroundings.o. The technique employed.

The report dates from January, 1900, to January,

1915.

In regard to the removal of tonsils for chronic inflammation in adults, the results varied as to the method employed. For instance, in the first five years tonsils were only partially removed and principally on account of repeated attacks of peritonsillar abscess or acute tonsillitis. The endresults were deplorably poor, but some remained free from their former trouble.

Later, when the author did tonsillectomy, the operation was performed for other reasons than the above: i.e., foul breath from putrid matter in the tonsils; secondary glandular involvement of the neck; rheumatic conditions; and affections of the eustachian tube. Marked improvement of the above conditions was noted, the patients gained much in weight and their general condition was

much improved.

As to the chronic tonsillar and adenoid disease of childhood, the author states that more striking benefit is seen than from any other surgical procedure known. As to the recurrence of adenoids the author states that such a thing does not take place; that these so-called recurring adenoids are granulation tissue or the remains of adenoids not sufficiently removed. The subject of sinus disease is barely touched upon in this installment. It is to be continued.

Otto M. Rott.

Dudley, W. H.: The Consideration of Nasal Conditions Causing Asthma. J. Ophth. & Oto-Laryngol., 1915, ix, 14. By Surg., Gynec. & Obst.

The author mentions the following pathological conditions of the nose, nasopharynx, and accessory sinuses, the correction of which have been followed by relief from bronchial asthma: (1) nasal polypi, (2) deflected septa, (3) enlarged turbinates, (4) foreign body, (5) sinusitis, (6) the cause of hay fever, (7) intumescent rhinitis, (8) septal spurs, (9) adenoids, and (10) emanations, as from horses, irritating the olfactory nerve.

Various authors are quoted concerning the frequency of nasal causes of asthma; and in conclusion the author mentions as a prominent factor such a cerebral condition, inherited or otherwise, which acts against the inhibiting influence of the brain in the normal individual, thus allowing a reflex to be transmitted to the bronchi, resulting in a constriction of its circular fibers.

Otto M. Rott.

Weinstein, J.: A Clinical Report of the Successful Use of Emetine in the Control of Hæmorrhage Following Nasopharyngeal Operations. *Med. Rec.*, 1915, lxxxvii, 102. By Surg., Gynec. & Obst.

The author reports 12 cases in which one-half a grain of emetine hydrochloride was given hypodermatically for the control or prevention of hæmorrhage during and after operations upon the nose and throat. The trial was successful in all the cases.

In one case of tonsillectomy under local anæsthesia the drug was given half an hour previous to operation, and no hæmorrhage resulted.

In the other eleven cases the drug was given after

operation with the following results:

1. The patient had bled profusely when operated upon for polypi several years previous. Operated on at this time for polypi and ethmoid (one side), practically no hæmorrhage resulting.

2. Case with a history of a profuse bleeder; weight 260 pounds; operated on for chronic suppurative ethmoiditis; practically no hæmorrhage.

- 3. After a previous nasal operation the patient bled for five days. This time the posterior ends of inferior turbinates were removed; packing removed next morning; no bleeding.
  - 4. Tonsillectomy under ether; no bleeding.

5. Hæmorrhage following tonsillectomy performed by another physician. Bleeding stopped in ten minutes after one injection of emetine.

6. History of capillary bleeding from the septum for the past year; recurrence every two or three days. Emetine injected three weeks ago; no bleeding since.

7. Not one drop of blood when packing was

removed following septum operation.

8. Profuse bleeding from double middle turbinectomy controlled in ten minutes by one injection

o. This is the only case in which the author found it necessary to use a second dose the next day.

10. No hæmorrhage when packing was removed following middle turbinectomy.

11. Results similar to preceding case.

Отто М. Котт.

#### MOUTH

Brown, G. V. I.: The Principles Which Govern the Ultimate Results of Harelip and Cleft-Palate Operations. Surg., Gynec. & Obst., 1915, xx, 87.

By Surg., Gynec. & Obst.

The standard of value in staphylorrhaphy must be the final result. Merely covering the palate fissure with tissue is not sufficient. Speech improvement is dependent upon many modifying factors. Judgment of the value of each operation depends upon its possibilities in producing speech, increased health, comfort, usefulness, and happiness. The measure of surgical effectiveness must be according to all of these considerations and all that their acquirement may involve or supply.

The following principles should govern operative

selection in staphylorrhaphy.

1. Never correct a deformity by surgical or other forcible means if such defect can be made to correct itself in the natural course of development.

2. Never destroy any structure that may be required for the perfection of future developmental

3. Never misplace or so disarrange the form or situation of any tissue in such manner as to impair its future functional usefulness.

4. Never exceed the reparative possibilities of tissue in flap formation by endeavoring to close completely at one operation the palate fissures of cases in which this is inadvisable.

5. Aim to improve, by operation if necessary, such operative conditions as cannot safely be over-

come immediately.

Deformities due to destruction of the premaxilla in closing lip and palate fissures are well known. Compression of the upper maxillæ in early infancy causes defects of the nares, palate, the upper dental arch, and the face. Wires forced through the upper maxillary bones of an infant inevitably destroy from one to four or five tooth germs. teeth do not erupt, and deformity results.

Flap reversing operations as performed by Lane and Davies-Colley are not favorable to development which promises good speech function. Including bone with the palate flaps might endanger the vitality of palatal bone structure, which if lost

might render the case hopeless.

Only by systematic treatment from the very beginning in infancy can the greatest benefits be conferred upon these individuals. Brown believes that the development of a complete system and the perfection of technique rather than new or original operations are most to be desired in the care of these patients. He recommends the system that he has adopted and modifications of the von Langenbeck operation.

He makes every effort to provide as perfect a palate as possible at a sufficiently early age in infancy to make sure that no adverse speech habits may be acquired. He states that theoretically this should give the best results, but that in practical experience it is not always true. He states that some of his best results, as evidenced by the characteristic cleft-palate speech sounds, have been secured in patients whose ages at the time of palate operation ranged from nine to sixty years, and some of his most imperfect speech results have been with patients for whom palate operative work was completed before they were two years old. The natural conclusion from this, especially when one considers another class of cases in which there is defective speech of similar character due to imperfect form in the development of the hard or soft palate, although without any indication of a cleft, is that perfection or imperfection in form is of paramount importance and often a more active factor in determining the speech habit difficulties which hitherto have been considered of first importance.

Berry, J.: Surgery of the Cleft Palate. Surg., Gynec. & Obst., 1915, xx, 85.

By Surg., Gynec. & Obst.

Berry says that the operation by median suture is the only one that really restores the palate to its natural condition and enables the patient to speak well. It is therefore very much to be preferred to any kind of "turnover" flap operation, the results of which, even in the hands of the most skillful, seem to him to be very poor. He favors operating on the associated harelip in early infancy, and postponing operation upon the palate until it can be done by median suture with a reasonable prospect of success, the exact time depending necessarily upon the width of the cleft and other considerations. In most cases he operates some time during the second year. He thinks Brophy's wiring operation much too dangerous to be generally employed. He agrees that Lane's operation possesses the merit of "simplicity," but states that those who are loudest in recommending the operation fail to bring forward any proof that the results, especially the results as regards speech, are at all satisfactory. He wonders why the advocates of this operation do not publish detailed lists of consecutive cases showing what their results really are, as he himself has done a number of times with regard to his median suture operations. The results of his operation he considers very satisfactory, especially in regard to improvement in speech function.

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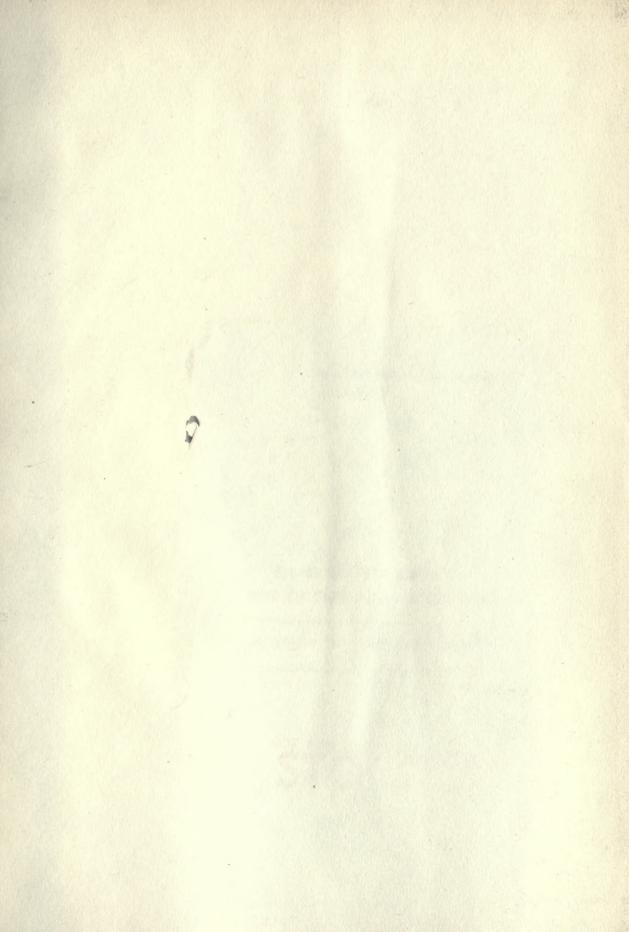
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